Appendix A

Maps and Drawings

Vicinity Map
BMP Site Maps

Pacific Gas and Electric Company®

General Construction Stormwater Managment Measures

1. ALL WORK TO BE PERFORMED WILL BE CONDUCTED PER THE PROJECT SPECIFICATIONS, APPLICABLE ENVIRONMENTAL PERMIT CONDITIONS, AND PER RISK TYPE 2 CONDITIONS OUTLINED IN ATTACHMENT E OF THE CONSTRUCTION GENERAL PERMIT.

2. PRIOR TO THE START OF CONSTRUCTION SENSITIVE AREAS WILL BE DELINEATED AND PROTECTED WITH SEDIMENT CONTROLS. BMP IMPLEMENTATION AND GOOD SITE MANAGEMENT BMPS ARE OUTLINED IN THE SWPPP AND OTHER SITE SPECIFIC REQUIREMENTS.

3. DURING ALL PHASES OF CONSTRUCTION, SITE LIMITS AND PERIMETER EROSION AND SEDIMENT CONTROL DEVICES MUST BE MONITORED AND MAINTAINED. GOOD SITE MANAGEMENT RELATED TO EQUIPMENT, MATERIAL AND WASTE MUST BE PERFORMED DAILY TO PREVENT POTENTIAL DISCHARGES FROM ENTERING NEARBY SENSITIVE AREAS INCLUDING AQUATIC RESOURCES, ROADSIDE INLETS, AND PUBLIC AREAS.

4. ACTIVE CONSTRUCTION WORKSPACE CONDITIONS WILL BE ASSESSED DAILY AND ALWAYS PRIOR TO THE ONSET OF PRECIPITATION. BASED ON SITE CONDITIONS, AN APPROPRIATE COMBINATION OF EROSION AND SEDIMENT CONTROL TEMPORARY BMPS WILL BE INSTALLED PRIOR TO PRECIPITATION EVENTS.

5. STAGING AND STORAGE AREAS WILL BE ESTABLISHED, KEPT CLEAN, AND WILL INCLUDE ADDITIONAL BMPS FOR PRE-STORM IMPLEMENTATION, AND SPILL CONTROL KITS FOR EMERGENCY USE AND RAPID DEPLOYMENT.

6. SITE INGRESS AND EGRESS LOCATION(S) WILL BE STABILIZED WITH CONSTRUCTION ENTRANCE/EXIT BMPS IF ACCESS IS NOT PAVED TO THE ACTIVE AREAS. STREET SWEEPING WILL BE CONDUCTED TO ABATE TRACK OUT ONTO PAVED ROADS AND PRIOR TO PRECIPITATION EVENTS.

7. SITE MONITORING WILL BE CONDUCTED PER CONSTRUCTION GENERAL PERMIT REQUIREMENTS FOR LUP PROJECTS BY A QSP OR TRAINED STAFF.

8. MAINTENANCE, REPAIR, OR DEGISN AND IMPLEMENTATION OF NEW BMPS WILL BEGIN WITHIN 72 HOURS OF IDENTIFICATION OF FAILURES OR OTHER SHORTCOMINGS.

9. ADDITIONAL MEASURES NOT SHOWN ON THE DRAWINGS MAY BE REQUIRED TO PREVENT THE DISCHARGE OF POLLUTANTS.

Common BMPs Shown in the Site Maps and Implementation Notes

(EC-2) PRESERVATION OF EXISTING VEGETATION. PROTECT EXISTING VEGETATION FOR NATURAL EROSION PREVENTION AND SEDIMENT TRAPPING. CONDUCT WORK WITHIN DESIGNATED AREAS. DELINEATE WORK AREAS AND TRAFFIC ROUTES, AS NEEDED.

(EC-4) HYDROSEED TO RESTORE VEGETATED AREAS.

(EC-16) NON-VEGETATIVE STABILIZATION. APPLY AND/OR MAINTAIN WHERE REVEGETATION REGROWTH IS NOT FEASIBLE.

(NS-3) PAVING AND GRINDING OPERATIONS MAY BE NECESSARY IN ALL WORK AREAS NEAR PAVEMENT AND CONCRETE. MEASURES WILL BE IMPLEMENTED WHEN NECESSARY TO CONTROL WASTES AND CONTAIN ANY SLURRIES FROM THESE OPERATIONS.

(SE-5) BIODEGRADABLE FIBER ROLL. INSTALL ON LEVEL CONTOURS, WHERE SHOWN AND AS NEEDED TO INTERCEPT RUNOFF, REDUCE VELOCITY, AND CONTROL EROSION. FIBER ROLL SHALL BE 100% BIODEGRADABLE.

(TC-1 AND TC-2) EFFECTIVE TRACKING CONTROL WILL BE ACHIEVED THROUGH DAILY INSPECTION, SABILIZED CONSTRUCTION ENTRANCES/EXITS, AND STREET SWEEPING AND VACUUMING (SE-7).

(WE-1) EFFECTIVE WIND EROSION CONTROL WILL BE IMPLEMENTED IF VISIBLE AIRBORNE DUST IS OBSERVED, LIMIT ONSITE VEHICLE SPEEDS TO 15 MPH OR LESS, AS NEEDED, IMPLEMENT A WATERING SCHEDULE TO MINIMIZE SUSPENSION OF SOIL PARTICLES.

(SE-7) STREET SWEEPING TO REMOVE SEDIMENT DEPOSITS ON PUBLIC ROADWAYS AND SURROUNDING PAVED SURFACES.

(WM-3) STOCKPILE MANAGEMENT. STOCKPILES WILL BE COVERED AND BERMED WHEN RAIN FORECAST PROBABILITY IS EQUAL TO OR GREATER THAN 50 PERCENT AND DURING RAIN EVENTS. STOCKPILES NOT SCHEDULED TO BE DISTURBED WITHIN 14 DAYS WILL BE COVERED AND BERMED.

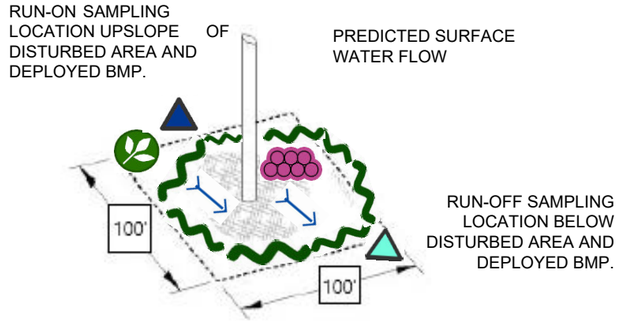
(WM-9) SANITARY/SEPTIC WASTE MANAGEMENT. PORTABLE TOILETS SHALL BE EQUIPPED WITH CONTAINMENT AND SECURED TO PREVENT TIPPING. FACILITIES SHOULD BE STAGED AT LEAST 50 FEET FROM WATERCOURSES AND TRAFFIC CIRCULATION.

RUN-OFF SAMPLING LOCATIONS ARE APPROXIMATE AND WILL BE UPDATED BASED ON ACTUAL FIELD OBSERVATIONS.

RUN-ON SAMPLING LOCATIONS ARE APPROXIMATE AND WILL BE UDPATED BASED ON ACTUAL FIELD OBSERVATIONS.

TYPICAL POLE REMOVAL / REPLACEMENT BMPS PRIOR AND DURING A QUALIFIED RAIN EVENT

100' x 100' DISTURBED AREA (UNPAVED)
(NOT TO SCALE)



Final Stabilization Requirements

FINAL STABILIZATION IS SATISFIED WHEN THE FOLLOWING REQUIREMENTS HAVE BEEN MET:

1. REMOVE ALL BMPs THAT ARE NOT DESIGNED TO BE LEFT IN PLACE.

2. ALL CONSTRUCTION EQUIPMENT MUST BE DEMOBILIZED AND REMOVED FROM THE SITE.

3. 70% VEGETATIVE COVERAGE OF WHAT IS NATURAL FOR THE SITE HAS BEEN ESTABLISHED, OR EQUIVALENT STABILIZATION METHODS HAVE BEEN EMPLOYED IN ALL DISTURBED AREAS.

Legend

- Sheet Flow Direction
- Run-Off Sampling Point
- Run-On Sampling Point
- EC-1 Scheduling
- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-5 Soil Binders
- EC-7 Geotextiles and Mats
- EC-14 Compost Blankets
- EC-15 Soil Preparation-Roughening
- EC-16 Non-Vegetated Stabilization
- NS-1 Water Conservation Practices
- NS-3 Paving and Grinding Operation
- NS-6 Illicit Connection/Discharge
- NS-7 Potable Water/Irrigation
- NS-9 Vehicle and Equipment Fueling
- NS-10 Vehicle and Equipment Maintenance
- NS-12 Concrete Curing
- NS-13 Concrete Finishing
- SE-1 Silt Fence
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- WM-1 Material Delivery and Storage
- WM-2 Material Use
- WM-3 Stockpile Management
- WM-4 Spill Prevention and Control
- WM-5 Solid Waste Management
- WM-6 Hazardous Waste Management
- WM-7 Contaminated Soil Management
- WM-8 Concrete Waste Management
- WM-9 Sanitary-Septic Waste Management
- WM-10 Liquid Waste Management
- MM BIO-1
- EC-16 Non-Vegetated Stabilization
- EC-2 Preservation of Existing Vegetation
- EC-9 Earth Dike and Drainage Swales
- SE-2 Sediment Basin

Pacific Gas and Electric Company

Estrella Substation and Paso Robles Area Reinforcement

Reconductoring Segment (Phase 1)
Ardmore Staging Area
LUP Risk Type 2

TYPICAL POLE REMOVAL / REPLACEMENT POST-CONSTRUCTION PERMANENT BMPS



PRESERVATION OF EXISTING VEGETATION (EC-2) AND HYDROSEEDING (EC-4) ARE THE PRIMARY METHODS FOR PERMANENT STABILIZATION. HOWEVER, IF VEGETATIVE GROWTH IS NOT FEASIBLE SUCH AS IN AREAS WITH ROCKY SUBSTRATE, RUDERAL/ DISTURBED AREAS, INFERTILE OR DROUGHT SOILS, OR IN AREAS WHERE WILDFIRE DEFENSIBLE SPACES OCCUR (NEAR RESIDENTIAL), NON-VEGETATIVE ALTERNATIVES SUCH AS DEGRADABLE MULCH AND SOIL BINDERS WILL BE APPLIED (EC-16).

Work Areas Typical BMPs:

Temporary Pole Replacement Work Area

Pole replacement (Phase 1 and Phase 2) would be mostly located within a 100x100 foot temporary work area along the existing 70 kV power line owned and operated by PG&E using a combination of tubular steel poles (TSPs), light-duty steel poles (LDSPs), and wood poles. BMPs will be deployed at pole temporary work areas as work progresses along the alignment, including applicable BMPs identified in the Site Maps. Once pole work is complete, any disturbed areas will be returned to pre-existing conditions, at a minimum. Typical BMPs for pole work areas may include fiber roll for perimeter control, hydromulch and/or soil stabilizer as a temporary erosion control, and inlet protection will be installed at all nearby, downstream inlets.

Temporary Crossing Structures Work Area

Crossing structures would be installed to protect existing roadways, such as Hwy 46, and other facilities from sagging conductors during construction. PG&E would auger an approximately 2-foot-diameter, 8-foot-deep hole within each crossing structure work area to facilitate the crossing structure installation. BMPs will be deployed at temporary crossing structure work areas as work progresses along the alignment as shown in the Site Maps. Once crossing structure work is complete, any disturbed areas will be returned to pre-existing conditions, at a minimum. Typical BMPs for pole work areas include fiber roll for perimeter control, hydromulch and/or soil stabilizer as a temporary erosion control, and inlet protection will be installed at all nearby, downstream inlets.

Temporary Pull Sites Work Area

Pull and tension sites, also known as stringing sites, would be used to install conductor on support structures. BMPs will be deployed at temporary pull sites as work progresses along the alignment as shown in the Site Maps. Once pull work is complete, any disturbed areas will be returned to pre-existing conditions, at a minimum. Typical BMPs for pull sites include wind erosion control, vehicle and equipment staging (management), waste management, street sweeping at ingress/egress points, and inlet protection will be installed at all nearby, downstream inlets.

Temporary Staging Area

Staging areas would be used for receiving and staging of materials and equipment, laydown areas, and employee parking. BMPs will be deployed at all staging areas throughout the duration of the project as shown in the Site Maps. Once staging areas are no longer active, any disturbed areas will be returned to pre-existing conditions, at a minimum. Typical BMPs for staging areas include fiber roll or silt fence or high visibility construction fence for perimeter control, stabilized construction entrance (if the area is not paved), hydromulch and/or soil stabilizer as a temporary erosion control, stockpile management, waste management, housekeeping, vehicle and equipment management, including spill kits and drip pans, street sweeping at ingress/egress points (if exiting onto a paved road from an unpaved area), and inlet protection will be installed at all nearby, downstream inlets. The Ardmore Staging Area will be used during all segments of construction. Because it is greater than 0.9 acre and more than a quarter mile away from the rest of the project activities it will be be permitted separately and will have a separate WDID. An additional staging area has been identified for use during the Reconductoring Segment (Phase 1) project that is more than a quarter of a mile away from the rest of the project activities and less than 0.9 acre of disturbance, therefore it will not be permitted.

Temporary Landing Zones (LZs)

Helicopter landing zones (LZ) may be used during construction for the staging, storage, refueling, and operation of helicopters during construction. While the number and exact locations of helicopter landing zones may change depending on site conditions at the time of construction, two sites have been identified for use during the Reconductoring Segment (Phase 1) project. Both LZs are more than a quarter of a mile away from the rest of the project activities and are less than 0.9 acre of disturbance each, therefore these areas will not be permitted.

Erosion & Sediment Notes:

This construction project will implement the following practices to provide effective temporary and final erosion control during construction:

1.Preserve existing vegetation where required and when feasible.

2. The area of soil disturbing operations shall be controlled such that the Contractor is able to implement erosion control BMPs quickly and effectively.

3. Stabilize non-active areas within 14 days of cessation of construction activities or sooner if stipulated by local requirements.

4. Control erosion in concentrated flow paths by applying erosion control blankets, check dams, erosion control seeding or alternate methods.

5. Prior to the completion of construction, apply permanent erosion control to remaining disturbed soil areas.

This construction project will implement the following practices to provide effective sediment control during construction:

1.Establish and maintain effective perimeter controls.

2. Stabilize all construction entrances and exits and ensure that construction traffic to and from the project is limited to the entrances and exits.

3. Ensure that all storm drain inlets and perimeter controls, runoff controls, and pollutant controls are maintained and effective.

4. Apply linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes to comply with sheet flow lengths as shown below:

SLOPE PERCENTAGE	SHEET FLOW LENGTH NOT TO EXCEED
0-25%	20 FEET
25-50%	15 FEET
OVER 50%	10 FEET

Pacific Gas and Electric Company

Estrella Substation and Paso Robles Area Reinforcement

Reconductoring Segment (Phase 1)
Ardmore Staging Area
LUP Risk Type 2

Legend

- 70 kV Pole for Pole Replacement
- Reconductoring Segment
- Staging Area
- Helicopter Landing Zone
- Pole Temporary Work Area
- Temporary Pull Sites
- Temporary Crossing Structures Work Areas

Access Roads

- Existing Footpath
- Existing Paved
- Existing Unpaved
- New Unpaved
- New Unpaved (Temporary)
- Overland Route

General Post-Construction Stormwater Managment Measures

1. ALL TEMPORARY DISTURBED AREAS WILL BE RETURNED TO PRE-EXISTING CONDITIONS AND STABILIZED AS SOON AS PRACTICABLE AFTER CONSTRUCTION ACTIVITES ARE COMPLETED AT EACH WORK AREA.

2. THE REMOVAL OF TEMPORARY BMPS WILL BE PHASED AS NECESSARY TO ENSURE SUCCESSFUL REVEGETATION AND SITE STABILIZATION.

3. CONSTRUCTION DEBRIS AND TRASH WILL BE REMOVED FROM EACH WORK AREA AND UPON PROJECT COMPLETION.

4. WHEN USING HYDROSEED TO REESTABLISH GRASS VEGETATION, USE NATIVE GRASS MIXTURE FROM A LOCAL SOURCE AND MULCH TO KEEP SEEDS IN PLACE AND TO MODERATE SOIL MOISTURE AND TEMPERATURE UNTIL SEEDS GERMINATE AND GROW. CONTROLLED WATERING MAY BE APPLIED IF SEASONAL RAINFALL IS NOT SUFFICIENT. THE ENTIRE AREA WOULD BE REGULARLY MONITORED FOR SIGNS OF EROSION; AREAS WILL BE REVEGETATED AS NECESSARY TO MAINTAIN ADEQUATE SOIL PROTECTION.

5. REVEGETATED AREAS WILL BE MONITORED UNTIL A GROUND COVERAGE OF A MINIMUM OF 70% OF NATURAL CONDITIONS OF LOCAL UNDISTURBED AREAS HAS BEEN ESTABLISHED. AREAS WHERE NO VEGETATION GREW WILL BE ANALYZED FOR THE REASON THAT SEED FAILED TO GERMINATE, AND RESEED IF APPROPRIATE OR STABILIZED USING ALTERNATE METHODS IF NEEDED.

6. UPON COMPLETION OF CONSTRUCTION, CONSTRUCTION EQUIPMENT WILL BE RMOVED AND ALL TEMPORARY DISTURBANCE AREAS WILL BE RESTORED TO THEIR APPROXIMATE PRE-CONSTRUCTION CONDITION, INCLUDING APPLYING NATIVE SEED MIX TO PROMOTE REVEGETATION AS NEEDED.

7. UNPAVED ACCESS ROADS WILL BE STABILIZED FOLLOWING CONSTRUCTION. TEMPORARY UNPAVED ACCESS ROADS WILL BE RETURNED TO PRE-EXISTING CONDITIONS AND STABILIZED. UNPAVED ACCESS ROADS THAT WILL BE USED FOLLOWING CONSTRUCTION FOR EASEMENT ACCESS WILL BE STABILIZED TO PREVENT EROSION AND SEDIMENTATION WITH NON-VEGETATIVE STABILIZATION (EC-16) MEASURES.

8. IN AREAS WHERE REVEGETATION IS NOT FEASIBLE, EQUIVALENT NON-VEGETATIVE STABILIZATION METHODS WILL BE EMPLOYED IN ALL DISTURBED AREAS (EC-16).

Post-Construction BMPs Shown in the Site Maps and Implementation Notes

(EC-2) PRESERVATION OF EXISTING VEGETATION. PROTECT EXISTING VEGETATION FOR NATURAL EROSION PREVENTION AND SEDIMENT TRAPPING. CONDUCT WORK WITHIN DESIGNATED AREAS. DELINEATE WORK AREAS AND TRAFFIC ROUTES, AS NEEDED.

- REPAIR OR REPLACE DAMAGED VEGETATION
- REPAIR DAMAGED ROOTS OR COMPACTED SOILS IN ROOT ZONES

(EC-4) HYDROSEED TO RESTORE VEGETATED AREAS.

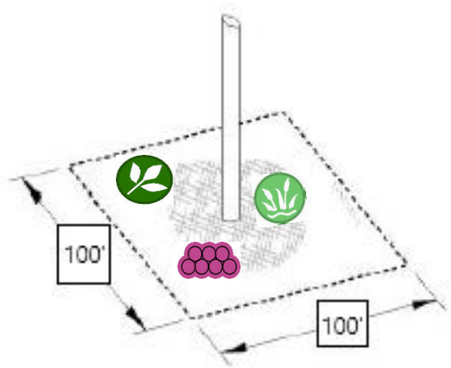
- INSPECT HYDROSEEDED AREAS FOR FAILURES AND RE-SEED, FERTILIZE, AND MULCH AS NECESSARY WITHIN THE PLANTING SEASON, USING NOT LESS THAN HALF THE ORIGINAL RATE.

(EC-16) NON-VEGETATIVE STABILIZATION. APPLY AND/OR MAINTAIN WHERE REVEGETATION REGROWTH IS NOT FEASIBLE.

- THERE ARE SEVERAL NON-VEGETATIVE STABILIZATION METHODS AND SELECTIONS SHOULD BE BASED ON SITE-SPEECIFIC CONDITIONS.
- INSPECT PERIODICALLY AND AFTER MAJOR STORM EVENTS TO LOOK FOR SIGNS OF EROSION OR DAMAGE TO TEH STABILIZATION.
- REPAIR OR REPLACE DAMAGED MATERIAL USED (I.E., DECOMPOSED GRANITE, DEGRADABLE MUCLCH, GEOTEXTILES AND MATS)

TYPICAL POLE REMOVAL / REPLACEMENT POST-CONSTRUCTION PERMANENT BMPS

100' x 100' DISTURBED AREA (UNPAVED)
(NOT TO SCALE)



Final Stabilization Requirements

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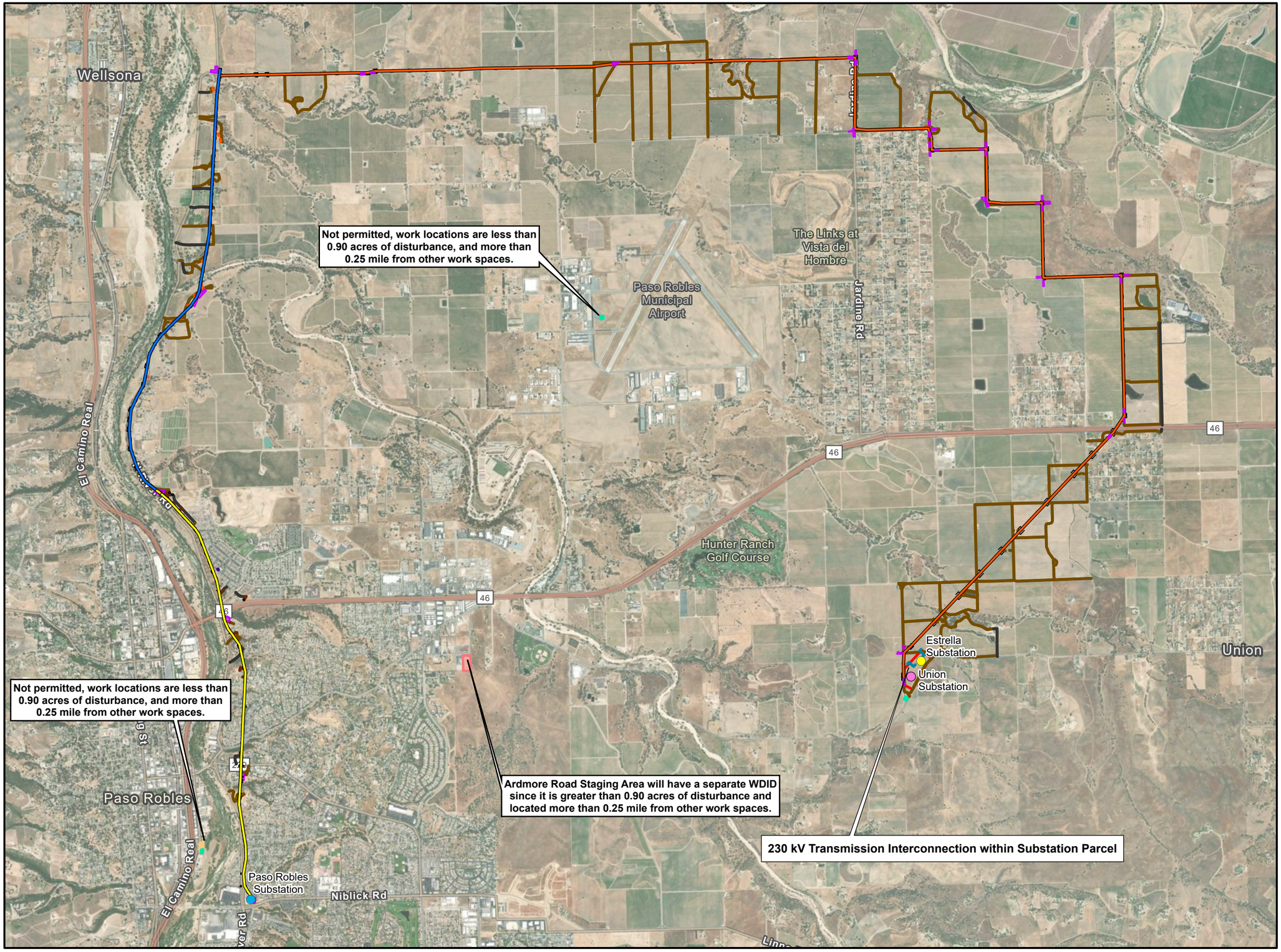
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Pacific Gas and Electric Company

Estrella Substation and Paso Robles Area Reinforcement

Reconductoring Segment (Phase 1)
Ardmore Staging Area
LUP Risk Type 2



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Estrella Substation and Paso Robles Area Reinforcement

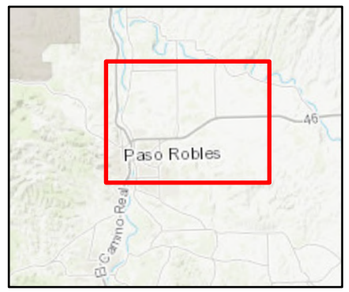
Site Map - All Segments

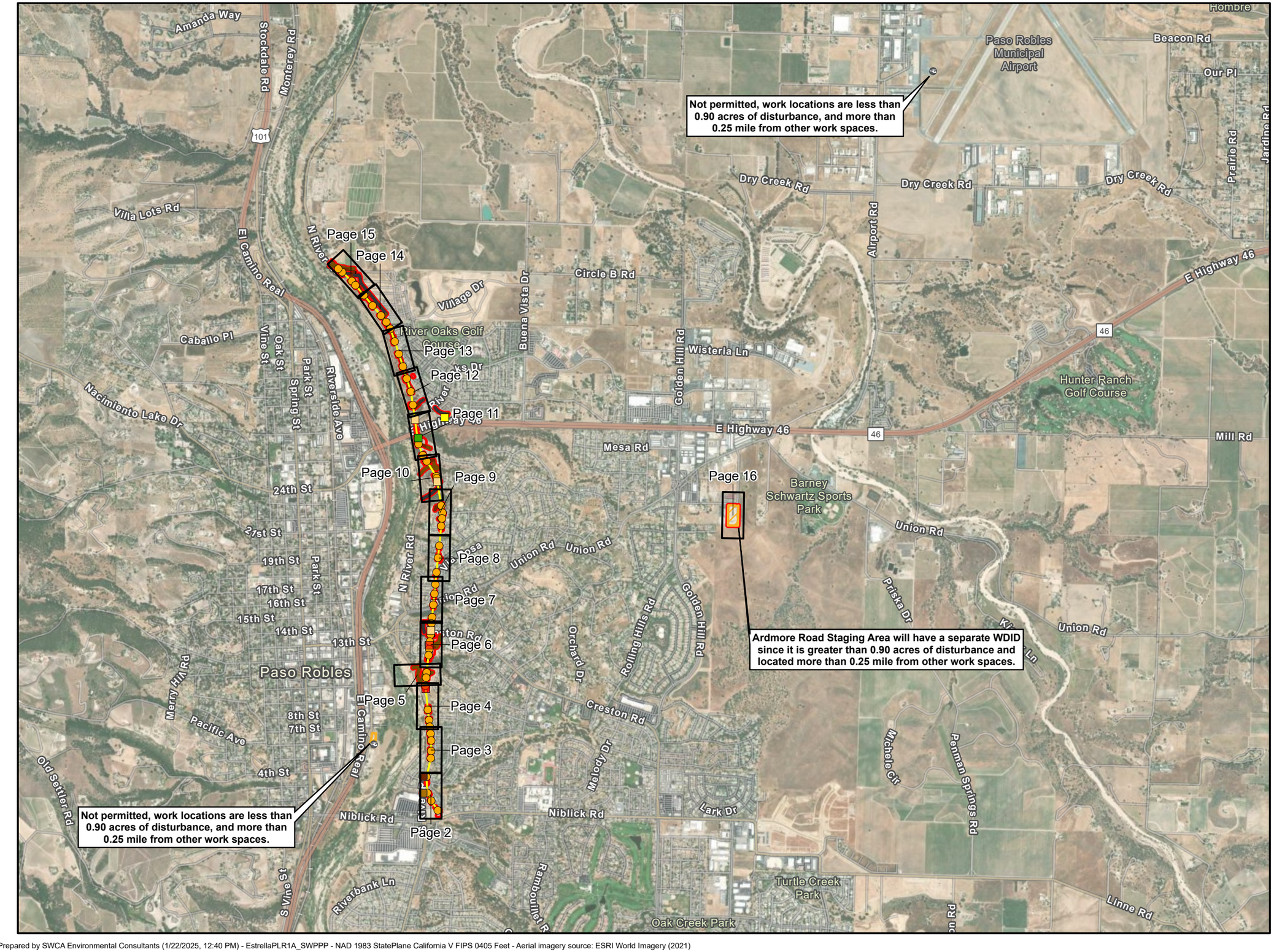
Project Components

- Estrella 230 kV Substation (New)
- Paso Robles Substation (Existing)
- Union 70 kV Substation (New)
- Reconductoring Segment Phase 1
- Reconductoring Segment Phase 2
- New 70kV Power Line
- 230 kV Transmission Interconnection
- Pole Temporary Work Area
- Temporary Pull Sites
- Substation Parcel
- Ardmore Staging Area
- Temporary Staging Area
- Helicopter Landing Zone
- Generator Staging Area

Access Roads

- Existing Paved
- Existing Unpaved
- New Unpaved
- Overland Route
- New Footpath





Estrella Substation and Paso Robles Area Reinforcement Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

- Mapbook Pages

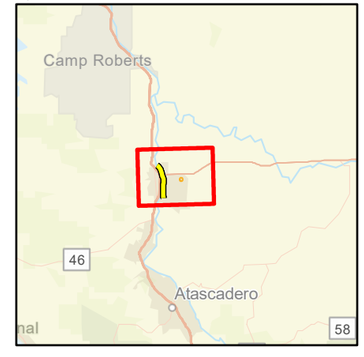
Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole
- Existing Distribution Pole to Be Removed
- Existing Distribution Pole to Be Replaced
- Existing Stub Pole to be Removed
- Existing Wood Stub Pole
- New Distribution Pole
- Reconductoring Segement
- Helicopter Landing Zone
- Pole Temporary Work Area
- Potential Staging Yard
- Project Boundary

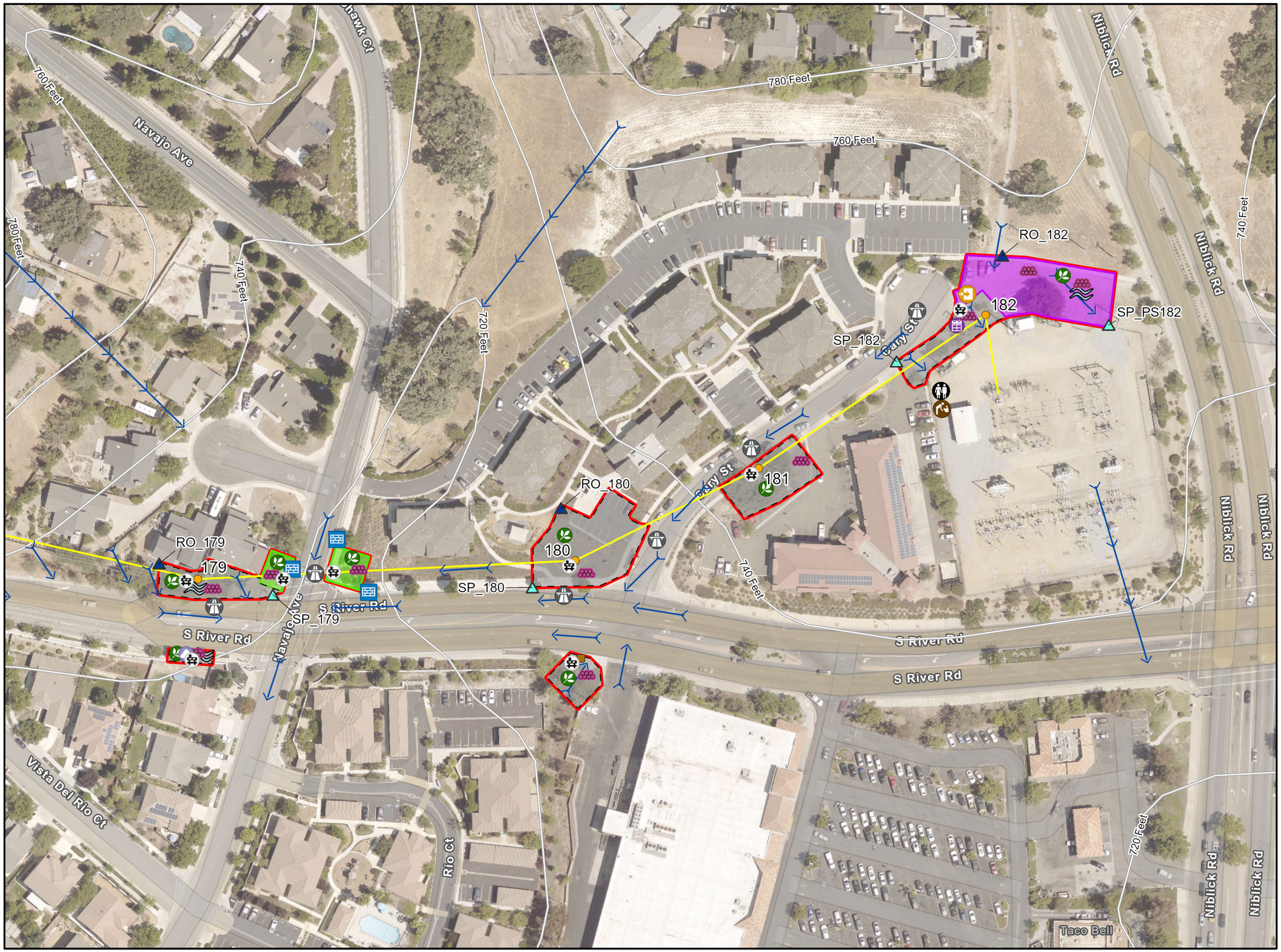
Phase 1 Project Components

Access Roads

- Existing Paved
- Existing Unpaved
- New Unpaved
- New Footpath



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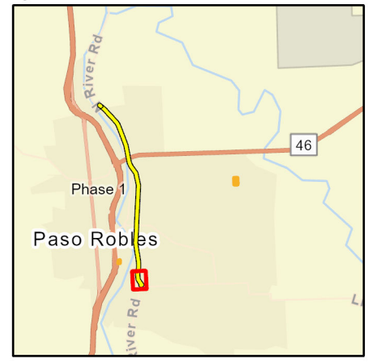
Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
- EC-1 Scheduling
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- NS-3 Paving and Grinding Operation
- NS-7 Potable Water/Irrigation
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance/Exit
- WE-1 Wind Erosion Control
- WM-9 Sanitary-Septic Waste Management
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Stub Pole to be Removed
- Existing Wood Stub Pole
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Temporary Pull Sites
- Project Boundary
- Elevation Contour



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Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

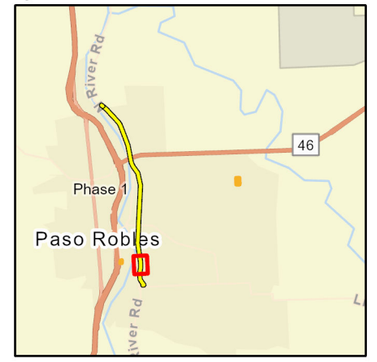
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- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- NS-3 Paving and Grinding Operation
- SE-7 Street Sweeping
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Wood Stub Pole
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



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Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Removed
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

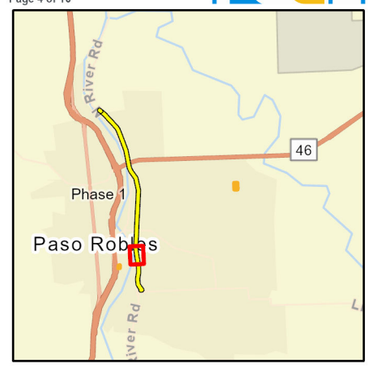
Phase 1 Project Components

Access Roads

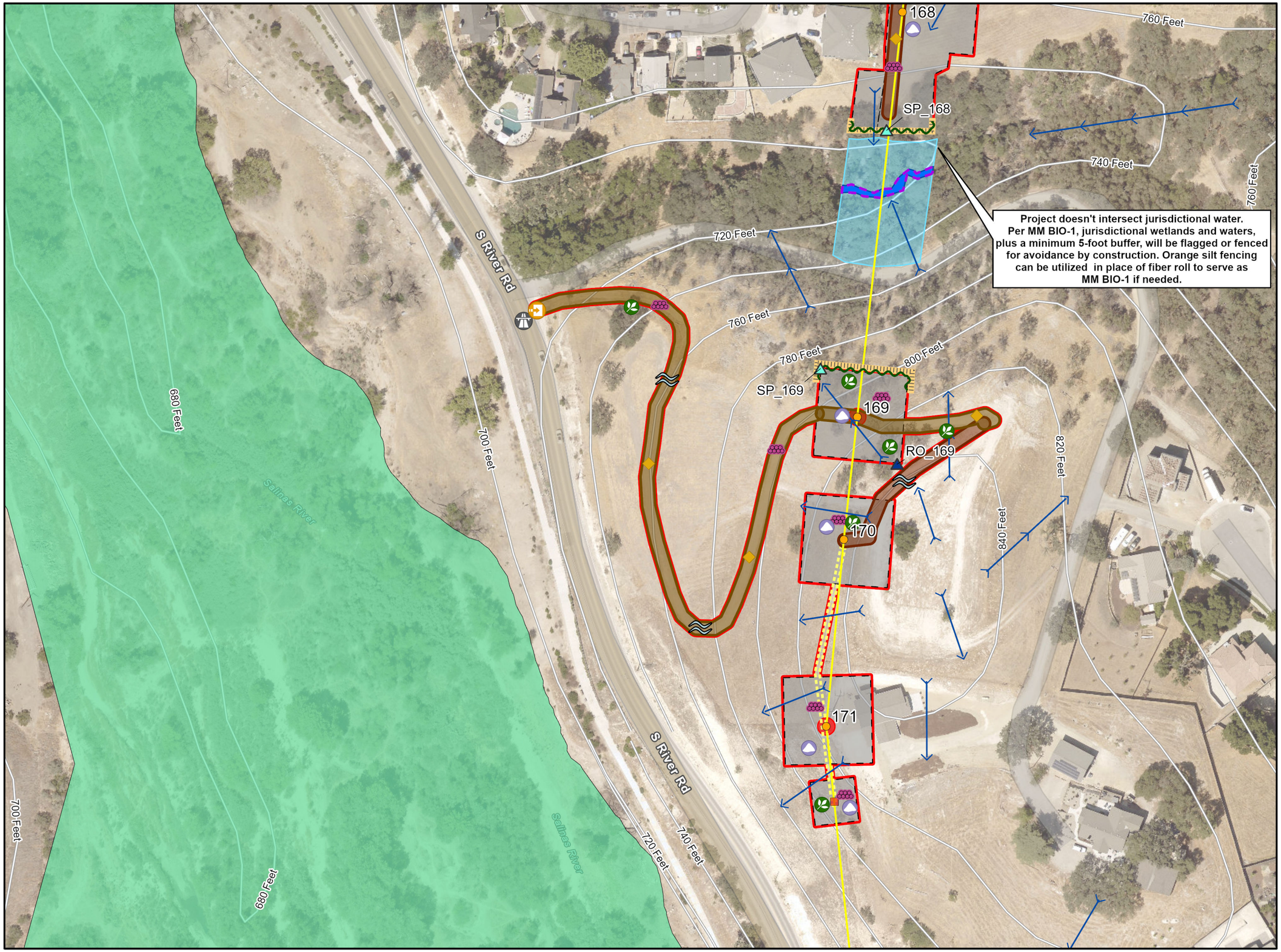
- Existing Unpaved
- New Footpath

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



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Estrella Substation and Paso Robles Area Reinforcement Project
Reconductoring Segment (Phase 1)
Ardmore Staging Area
Construction BMP Maps

CASQA BMPs
- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- SE-5 Fiber Rolls
- SE-7 Street Sweeping
- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components
- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Removed
- Reconductoring Segement
- MM BIO-1
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

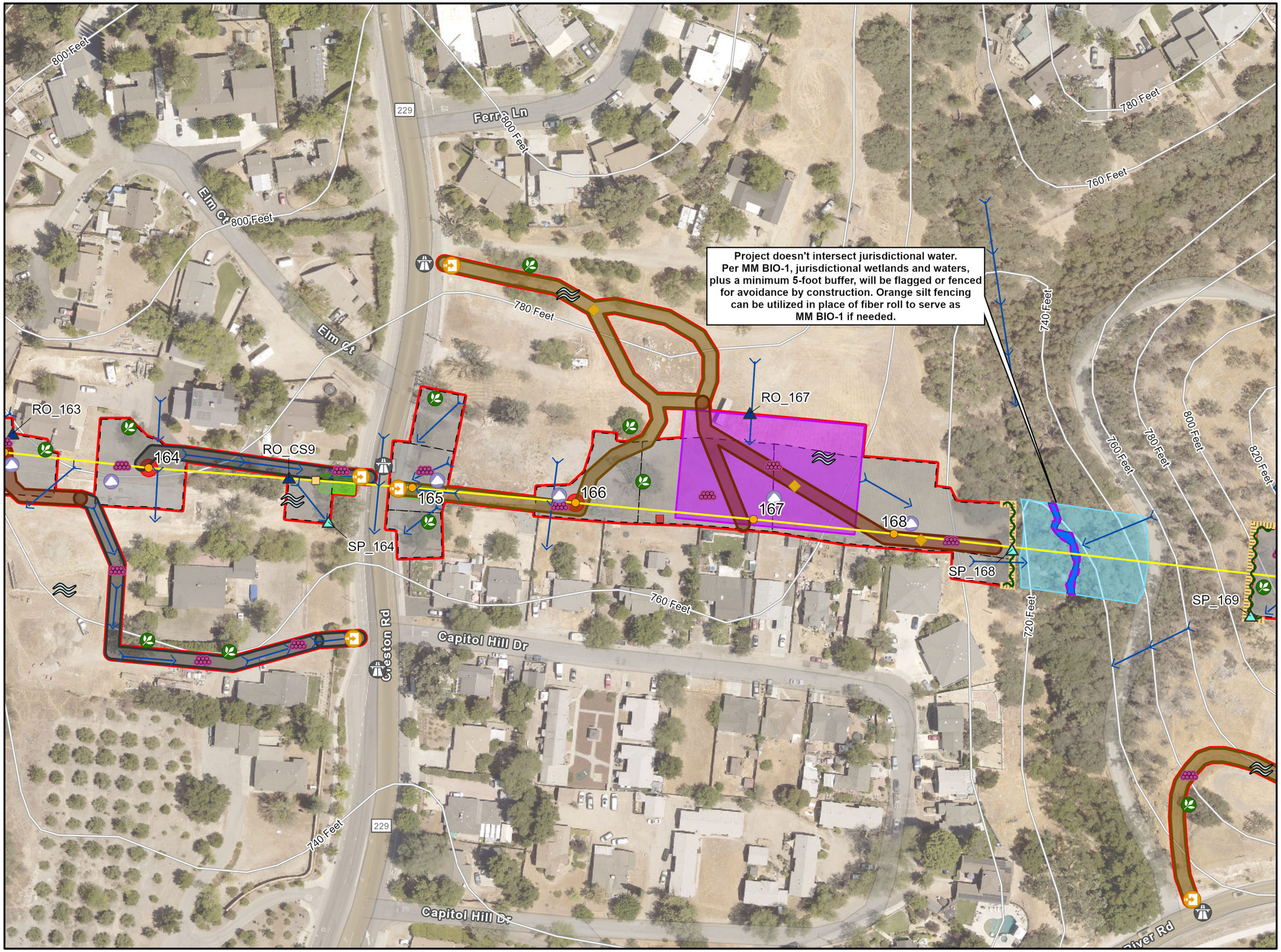
Phase 1 Project Components

Access Roads
- Existing Unpaved
- New Unpaved
- New Footpath

Jurisdictional Waters
- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



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0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

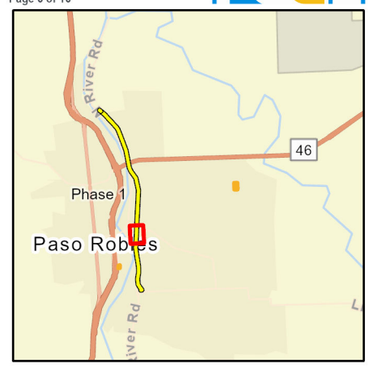
CASQA BMPs
- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- SE-5 Fiber Rolls
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- TC-2 Stabilized Construction Roadway
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- Sheet Flow Direction

Phase 1 Project Components
- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Removed
- Existing Distribution Pole to Be Replaced
- Reconductoring Segement
- MM BIO-1
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Temporary Pull Sites
- Project Boundary

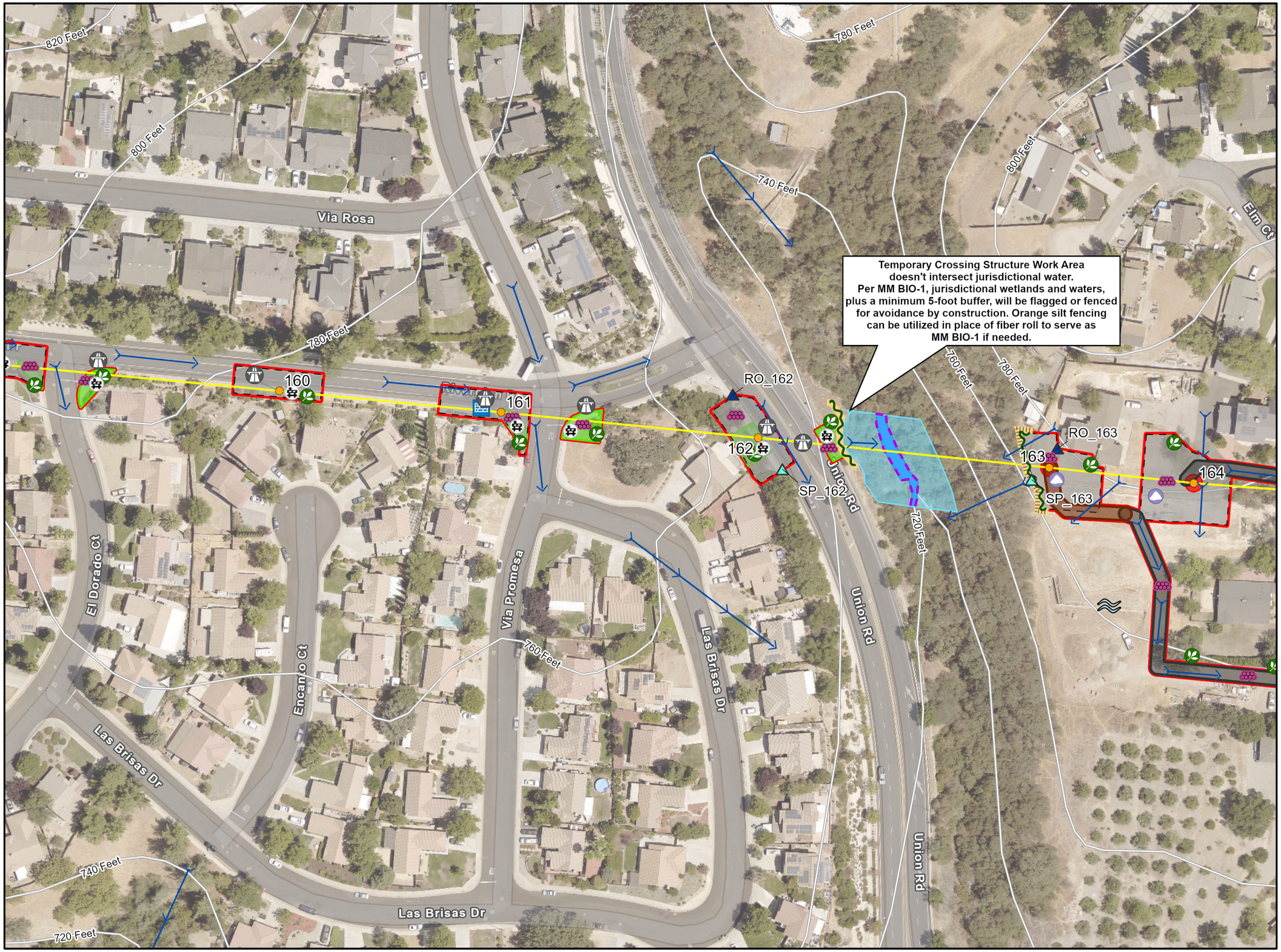
Phase 1 Project Components

Access Roads
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters
- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 1:08 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



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Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
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- NS-3 Paving and Grinding Operation
- SE-5 Fiber Rolls
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- MM BIO-1
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Project Boundary

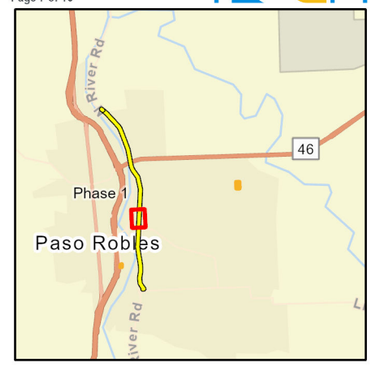
Phase 1 Project Components

Access Roads

- Existing Paved
- New Unpaved

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 1:09 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



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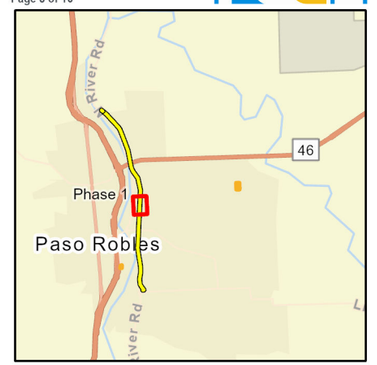
Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

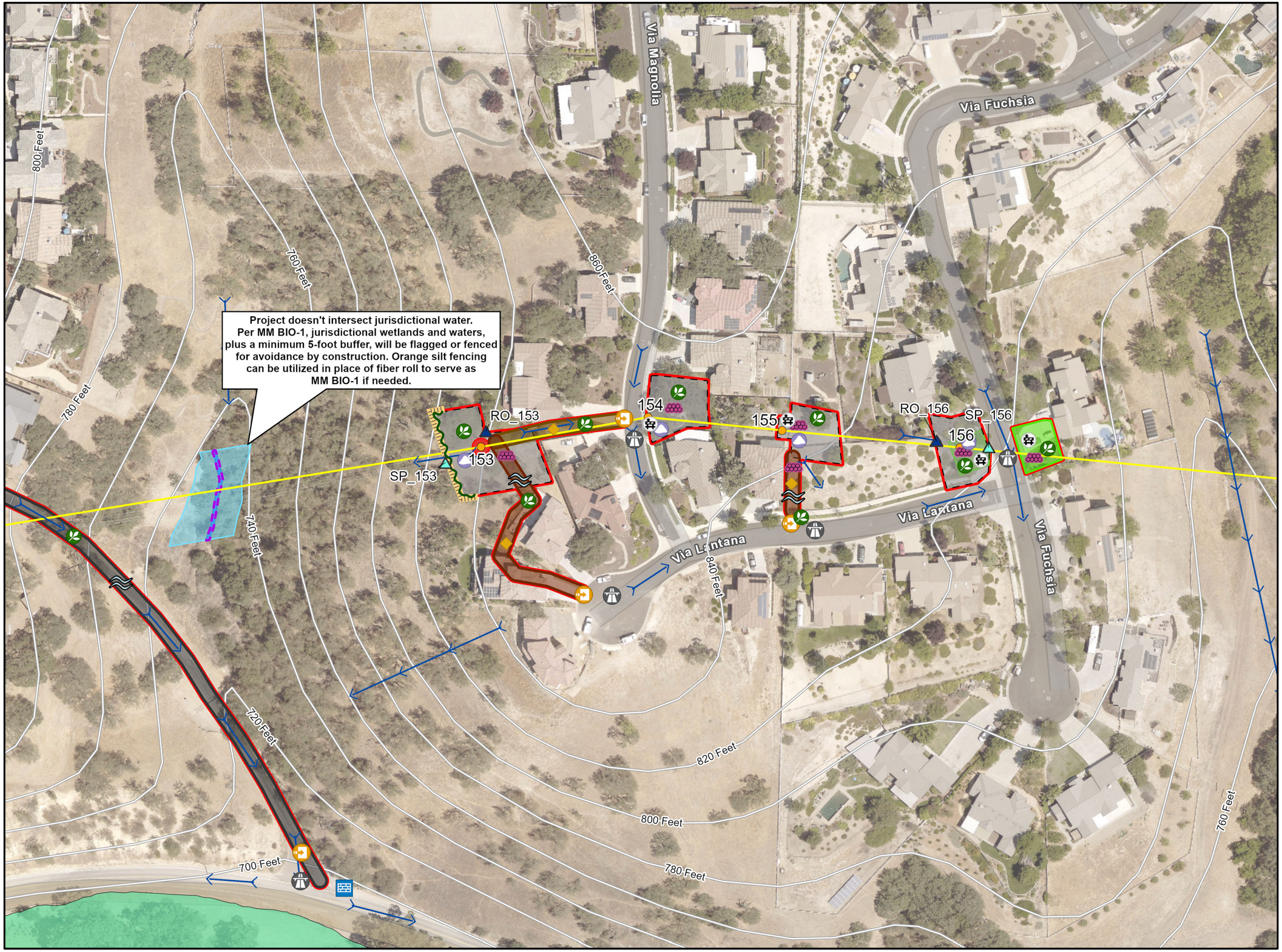
- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-16 Non-Vegetated Stabilization
- NS-3 Paving and Grinding Operation
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Project Boundary
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 1:09 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



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1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
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- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- MM BIO-1
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Project Boundary

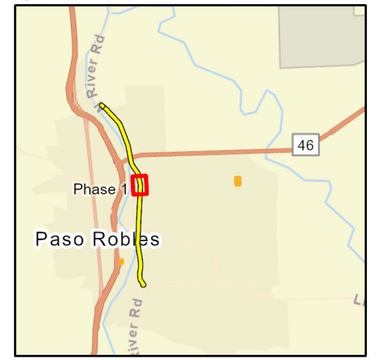
Phase 1 Project Components

Access Roads

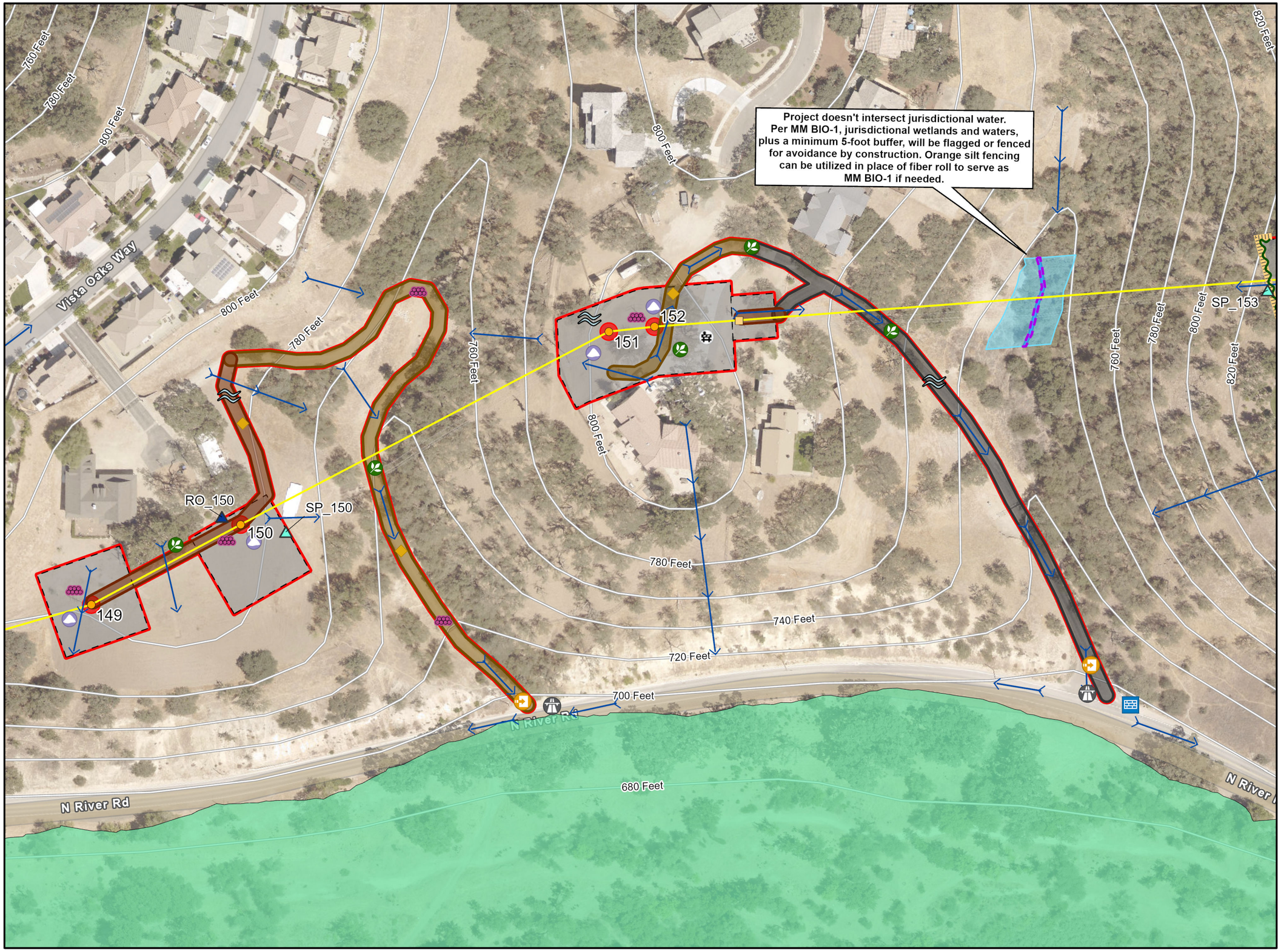
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



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0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
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- EC-2 Preservation of Existing Vegetation
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- NS-3 Paving and Grinding Operation
- SE-5 Fiber Rolls
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- Sheet Flow Direction
- Existing Distribution Pole to Be Replaced
- Reconductoring Segement
- MM BIO-1
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

Phase 1 Project Components

Access Roads

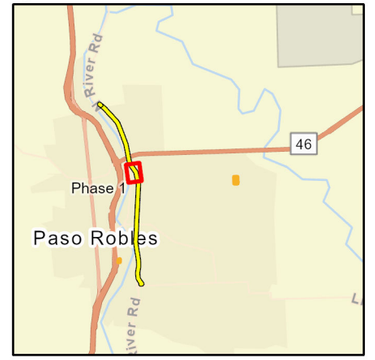
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

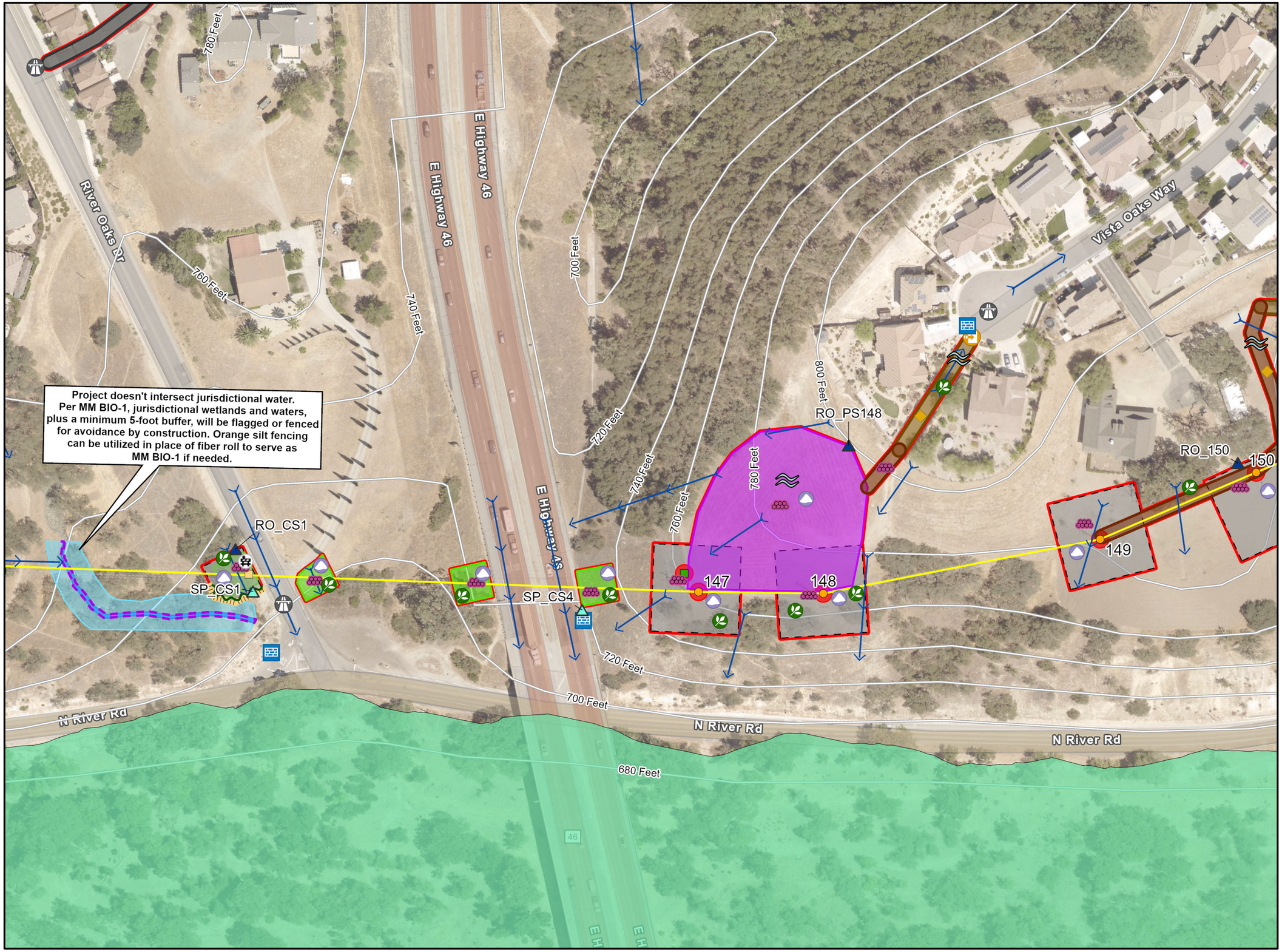
- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour

Phase 1 Project Components

- 70 kV Pole for Pole Replacement



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0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- NS-3 Paving and Grinding Operation
- SE-5 Fiber Rolls
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Replaced
- New Distribution Pole
- Reconductoring Segement
- MM BIO-1
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Temporary Pull Sites
- Project Boundary

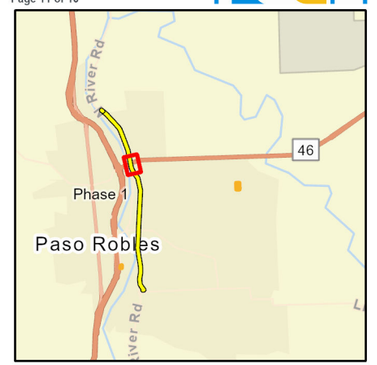
Phase 1 Project Components

Access Roads

- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 1:10 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



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1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- NS-3 Paving and Grinding Operation
- SE-5 Fiber Rolls
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Replaced
- Reconductoring Segment
- MM BIO-1
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Generator Staging Area
- Temporary Crossing Structures Work Areas
- Project Boundary

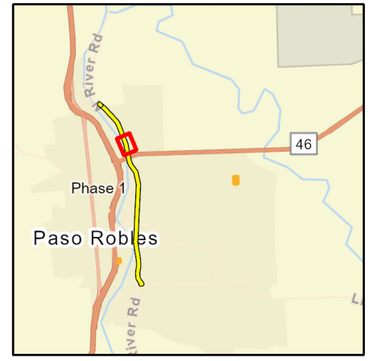
Phase 1 Project Components

Access Roads

- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



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0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
- EC-2 Preservation of Existing Vegetation
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- EC-16 Non-Vegetated Stabilization
- SE-7 Street Sweeping
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- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

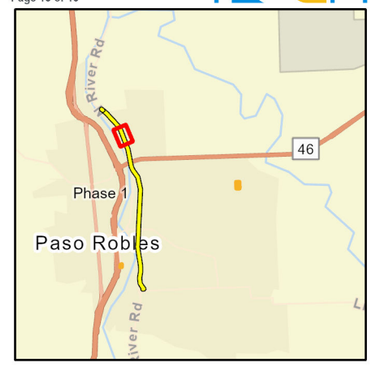
Phase 1 Project Components

Access Roads

- New Unpaved

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 1:11 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
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- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

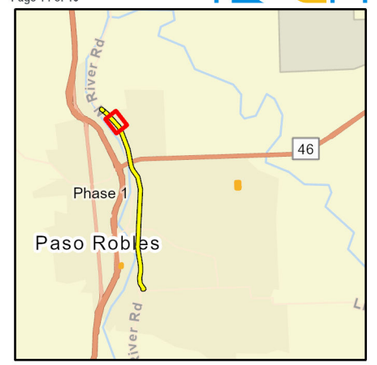
Phase 1 Project Components

Access Roads

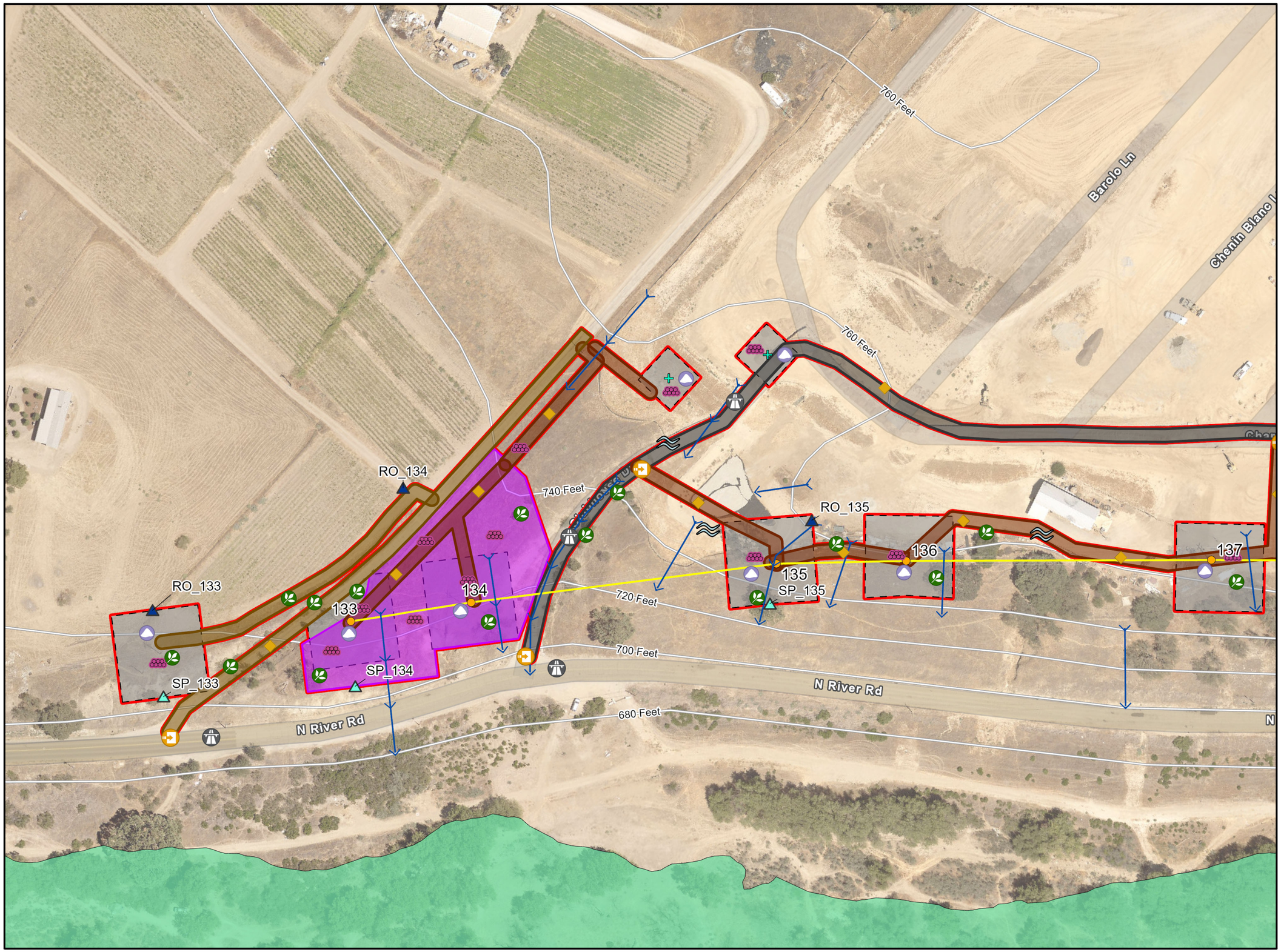
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 1:12 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

- Run-Off Sampling Point
- Run-On Sampling Point
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- EC-5 Soil Binders
- EC-16 Non-Vegetated Stabilization
- SE-7 Street Sweeping
- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway
- WE-1 Wind Erosion Control
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Temporary Distribution Pole
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Pull Sites
- Project Boundary

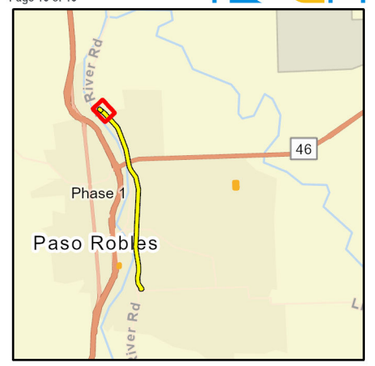
Phase 1 Project Components

Access Roads

- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 1:12 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)

Ardmore Road Staging Area will have a separate WDID since it is greater than 0.90 acres of disturbance and located more than 0.25 mile from other work spaces. Dikes/swales and sediment basins in the staging area will be protected during construction with existing vegetation preserved, and returned to pre-existing conditions at the end of construction.

820 Feet

Ardmore Rd

RO_SA5

SP_SA5

Ardmore Rd

BMP locations are not exact and will be utilized within the staging area as appropriate

0 20 40 60 80 Feet

1:800

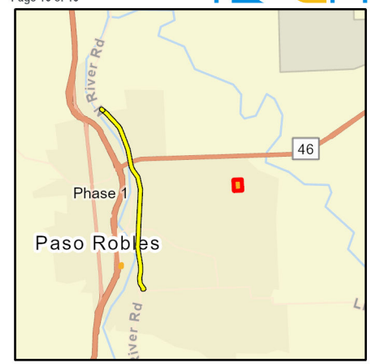
Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Construction BMP Maps

CASQA BMPs

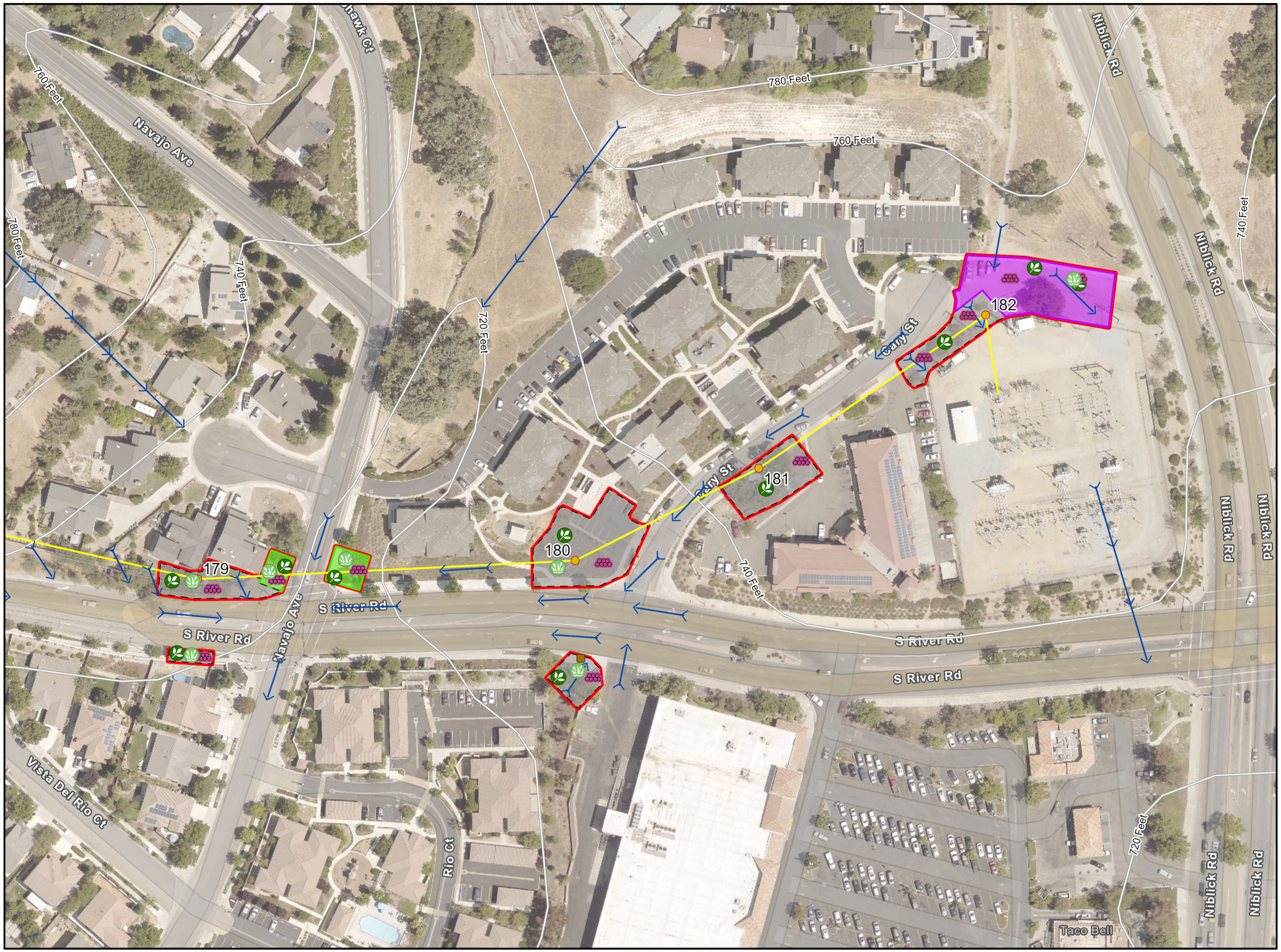
- Run-Off Sampling Point
- Run-On Sampling Point
- EC-1 Scheduling
- EC-2 Preservation of Existing Vegetation
- EC-16 Non-Vegetated Stabilization
- NS-1 Water Conservation Practices
- NS-6 Illicit Connection/ Discharge
- NS-7 Potable Water/Irrigation
- NS-9 Vehicle and Equipment Fueling
- NS-10 Vehicle and Equipment Maintenance
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-7 Street Sweeping
- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance/Exit
- WE-1 Wind Erosion Control
- WM-1 Material Delivery and Storage
- WM-2 Material Use
- WM-3 Stockpile Management
- WM-4 Spill Prevention and Control
- WM-5 Solid Waste Management
- WM-6 Hazardous Waste Management
- WM-7 Contaminated Soil Management
- WM-8 Concrete Waste Management
- WM-9 Sanitary-Septic Waste Management
- WM-10 Liquid Waste Management
- EC-9 Earth Dike and Drainage Swales
- SE-2 Sediment Basin
- Sheet Flow Direction

Phase 1 Project Components

- Potential Staging Yard
- Project Boundary
- Elevation Contour



Prepared by SWCA Environmental Consultants (2/3/2025, 4:28 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 2/3/2025)



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1:1,300

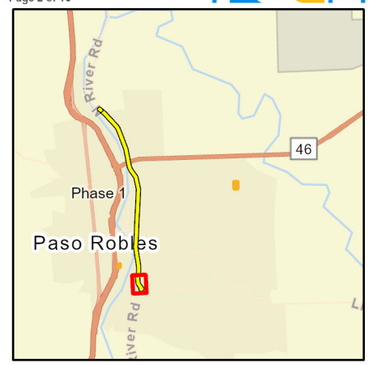
Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Stub Pole to be Removed
- Existing Wood Stub Pole
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Temporary Pull Sites
- Project Boundary
- Elevation Contour





0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project
Reconductoring Segment (Phase 1)
Ardmore Staging Area
Post-Construction BMP Maps

CASQA BMPs

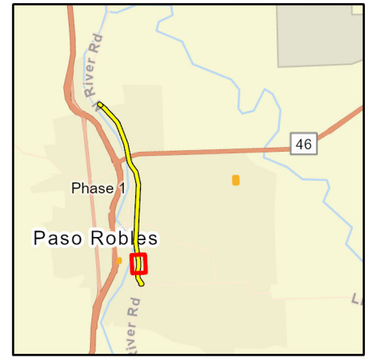
- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Wood Stub Pole
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



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0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Removed
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

Phase 1 Project Components

Access Roads

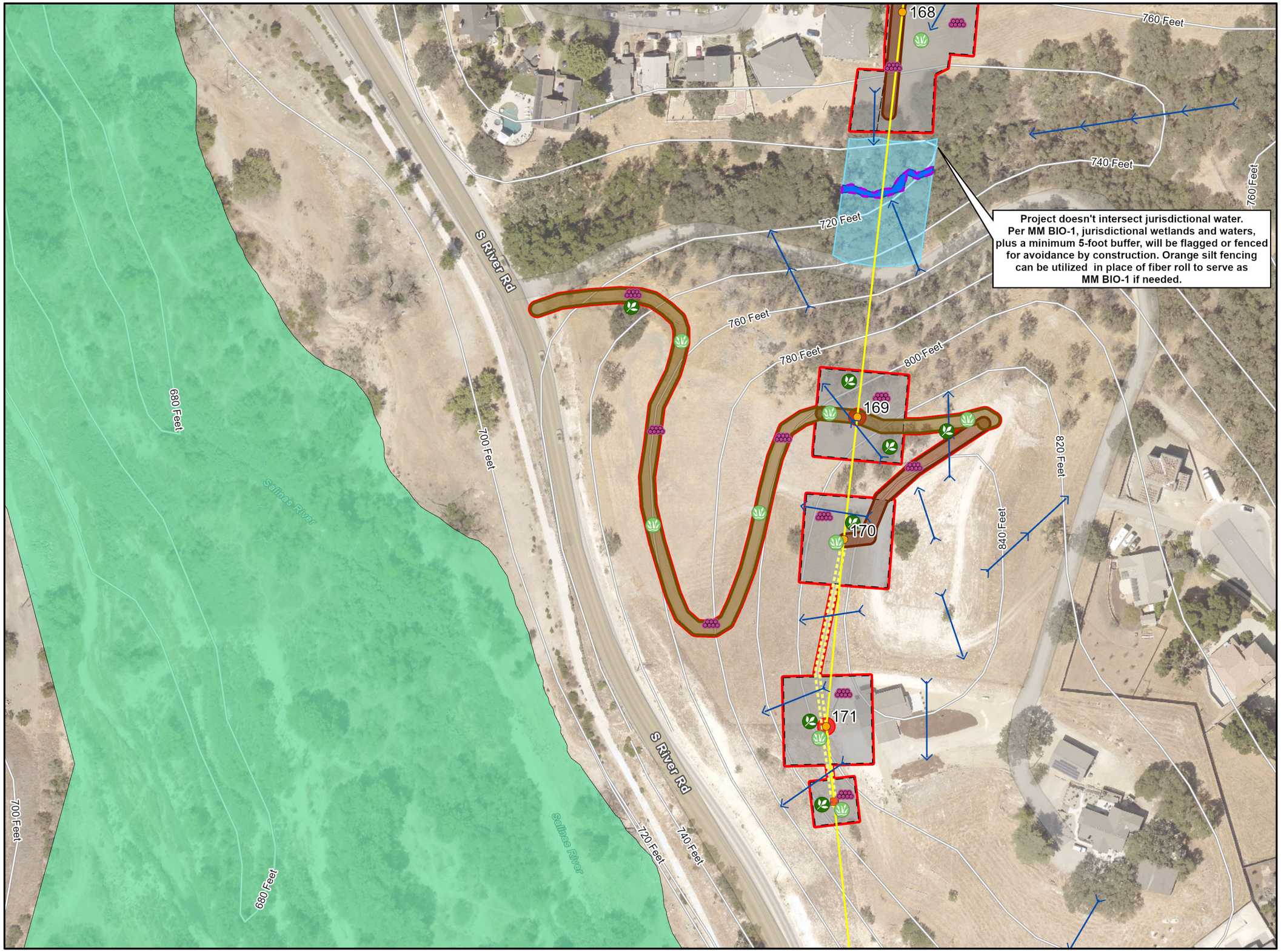
- Existing Unpaved
- New Footpath

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 12:49 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Removed
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

Phase 1 Project Components

Access Roads

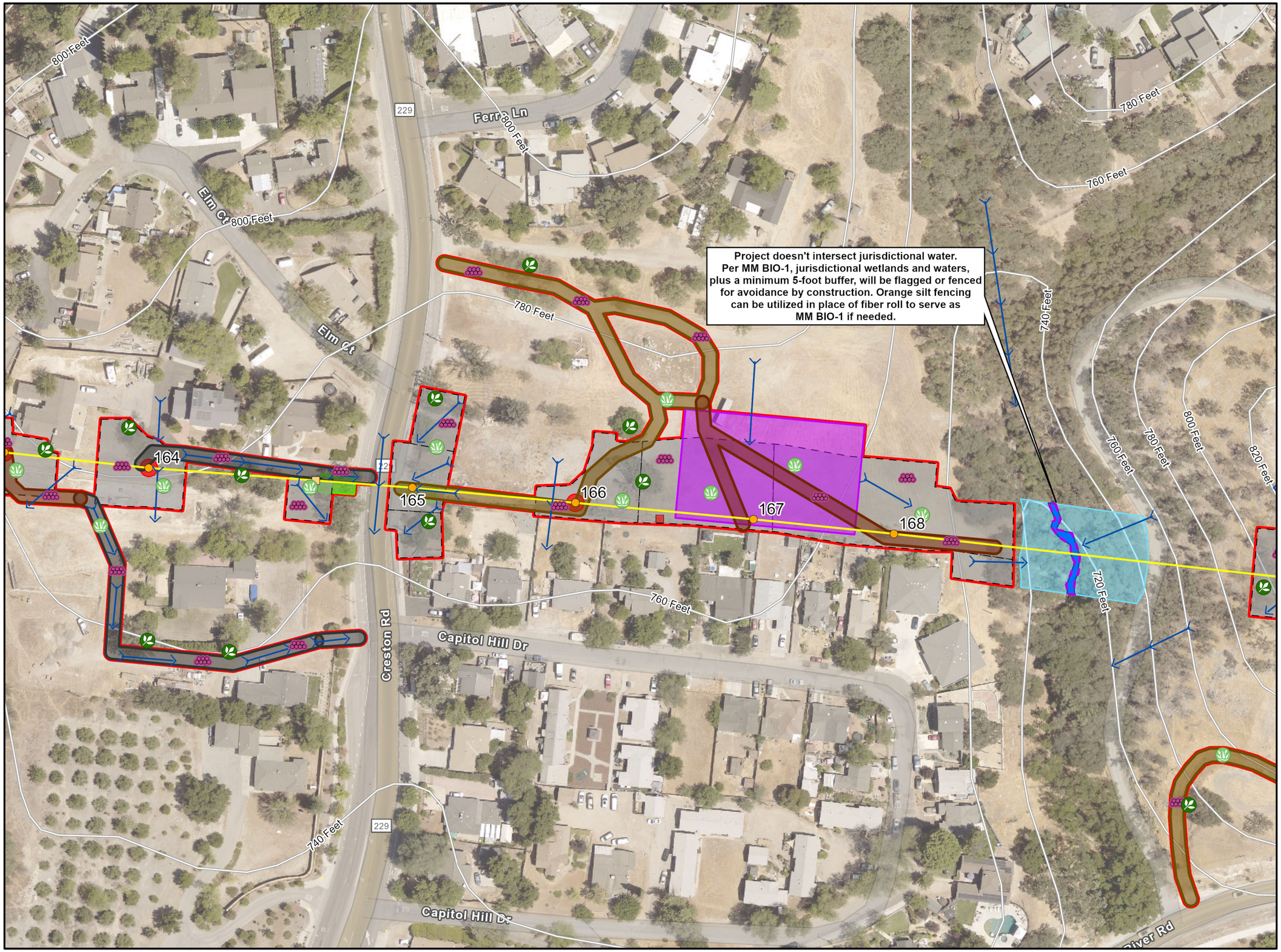
- Existing Unpaved
- New Unpaved
- New Footpath

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 12:49 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs
- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components
- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Removed
- Existing Distribution Pole to Be Replaced
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Temporary Pull Sites
- Project Boundary

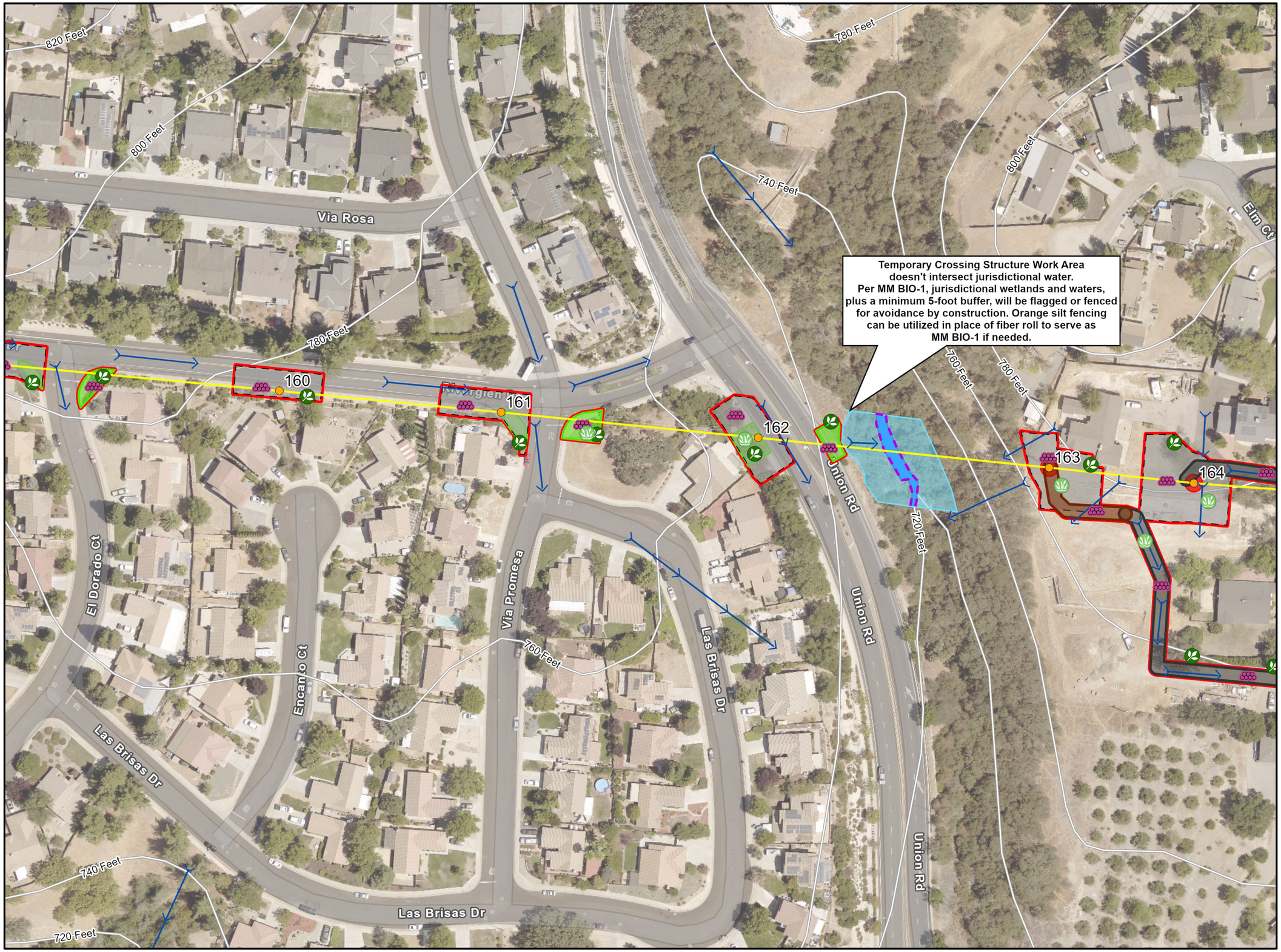
Phase 1 Project Components

Access Roads
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters
- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 12:50 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



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Estrella Substation and Paso Robles Area Reinforcement Project
Reconductoring Segment (Phase 1)
Ardmore Staging Area
Post-Construction BMP Maps

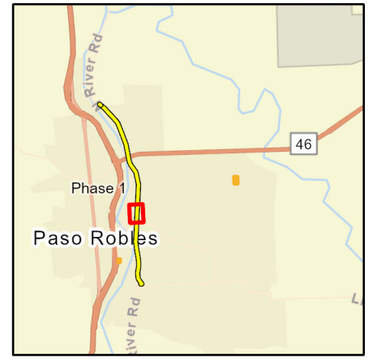
CASQA BMPs
- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components
- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Project Boundary

Phase 1 Project Components

Access Roads
- Existing Paved
- New Unpaved

Jurisdictional Waters
- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 12:50 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



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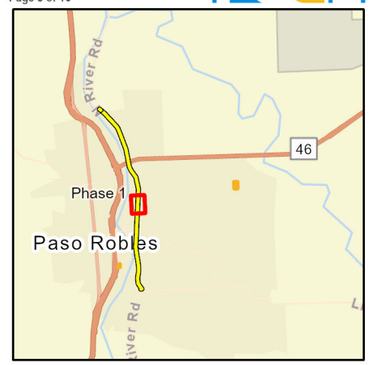
Estrella Substation and Paso Robles Area Reinforcement Project
Reconductoring Segment (Phase 1)
Ardmore Staging Area
Post-Construction BMP Maps

CASQA BMPs

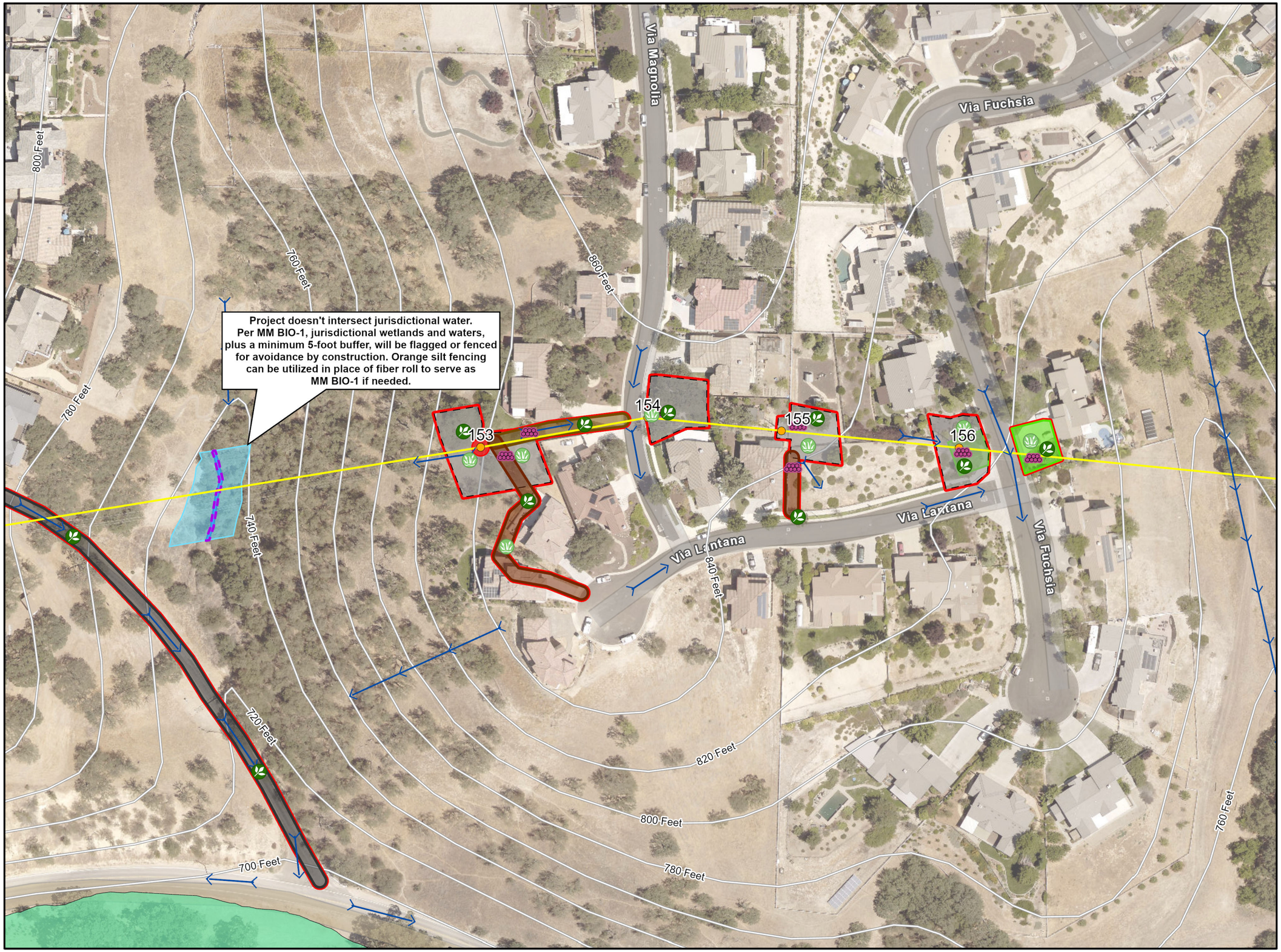
- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Project Boundary
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 12:50 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



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1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project
Reconductoring Segment (Phase 1)
Ardmore Staging Area
Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Project Boundary

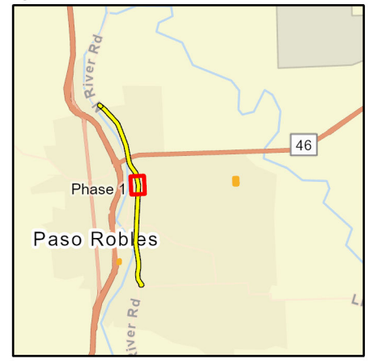
Phase 1 Project Components

Access Roads

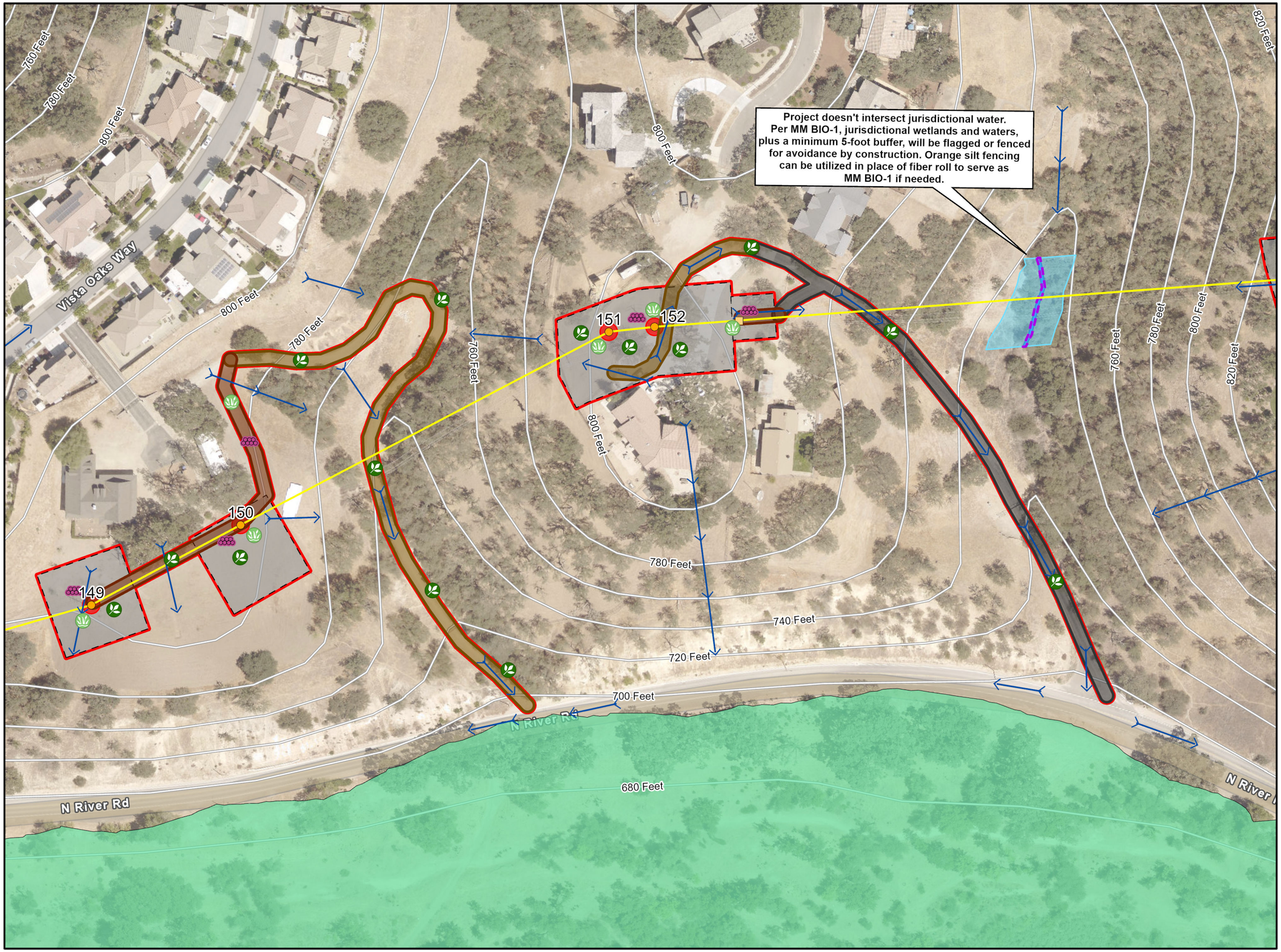
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



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Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Replaced
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

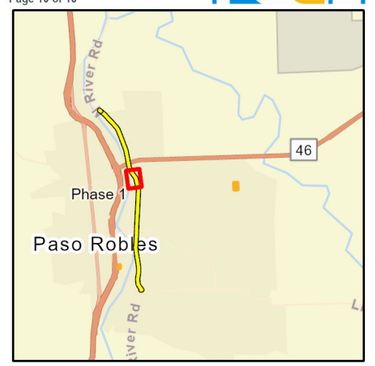
Phase 1 Project Components

Access Roads

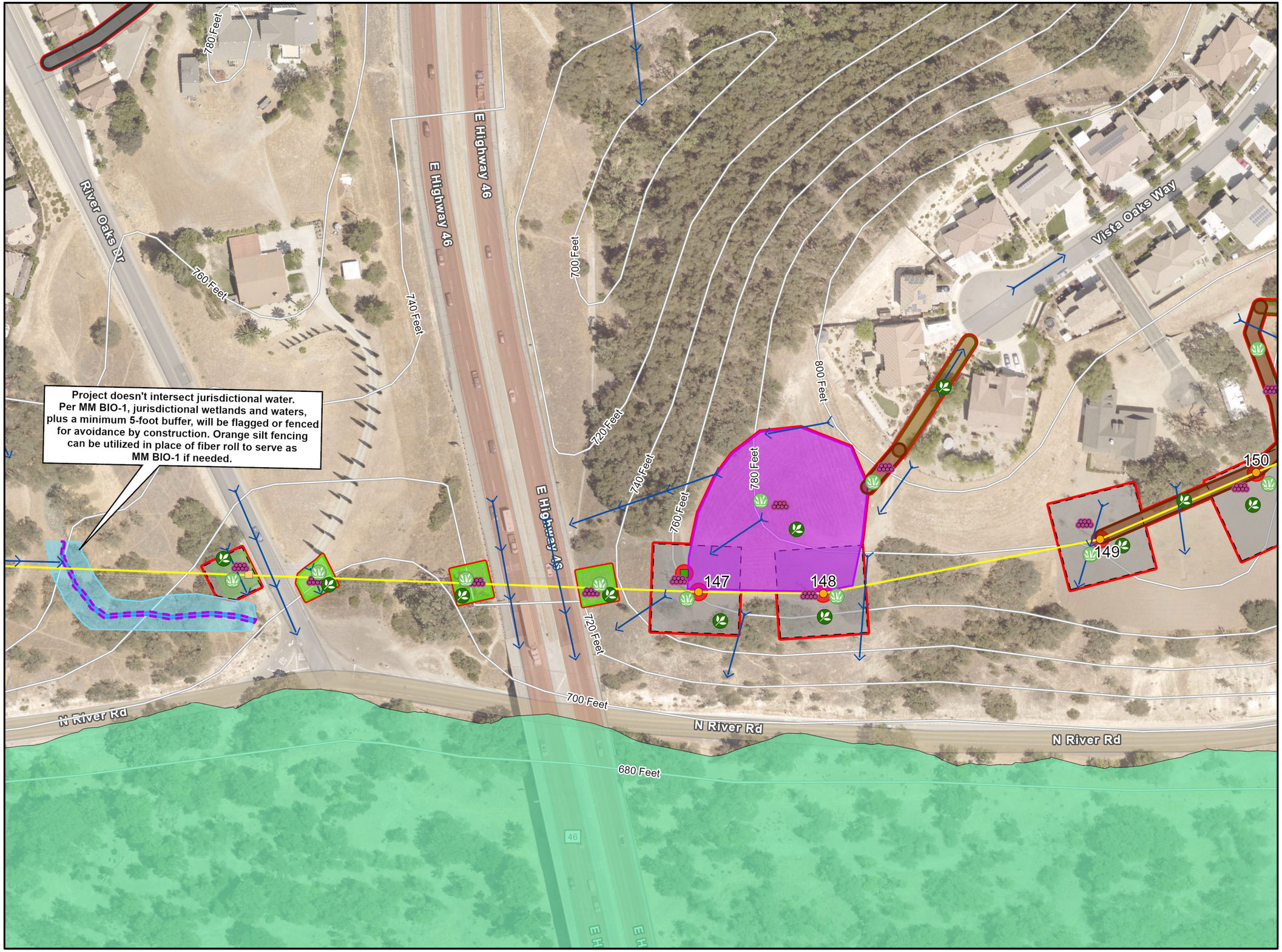
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 12:51 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Replaced
- New Distribution Pole
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Crossing Structures Work Areas
- Temporary Pull Sites
- Project Boundary

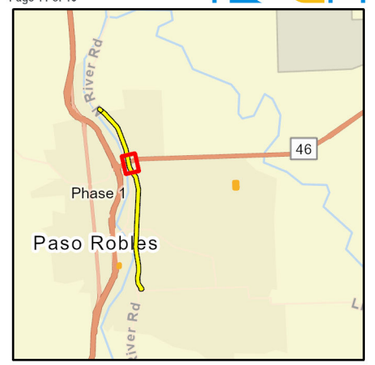
Phase 1 Project Components

Access Roads

- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



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1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project
Reconductoring Segment (Phase 1)
Ardmore Staging Area
Post-Construction BMP Maps

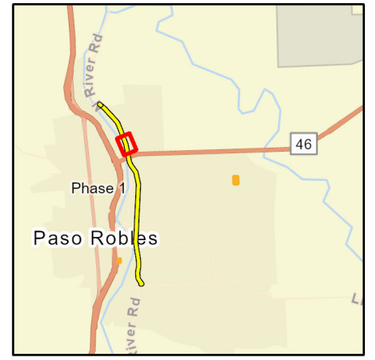
CASQA BMPs
- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components
- 70 kV Pole for Pole Replacement
- Existing Distribution Pole to Be Replaced
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Generator Staging Area
- Temporary Crossing Structures Work Areas
- Project Boundary

Phase 1 Project Components

Access Roads
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters
- SWQCB Jurisdiction
- CDFW Jurisdiction
- USACE Jurisdiction
- Salinas River Riparian Habitat
- Elevation Contour



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1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

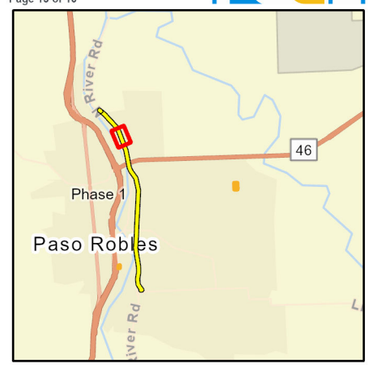
Phase 1 Project Components

Access Roads

- New Unpaved

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



Prepared by SWCA Environmental Consultants (1/31/2025, 12:53 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 1/31/2025)



0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project
Reconductoring Segment (Phase 1)
Ardmore Staging Area
Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Project Boundary

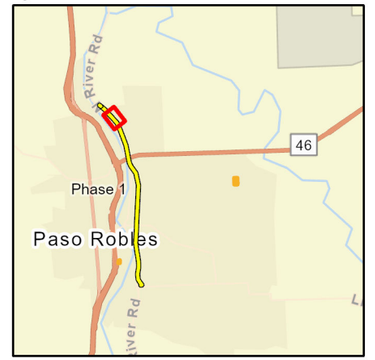
Phase 1 Project Components

Access Roads

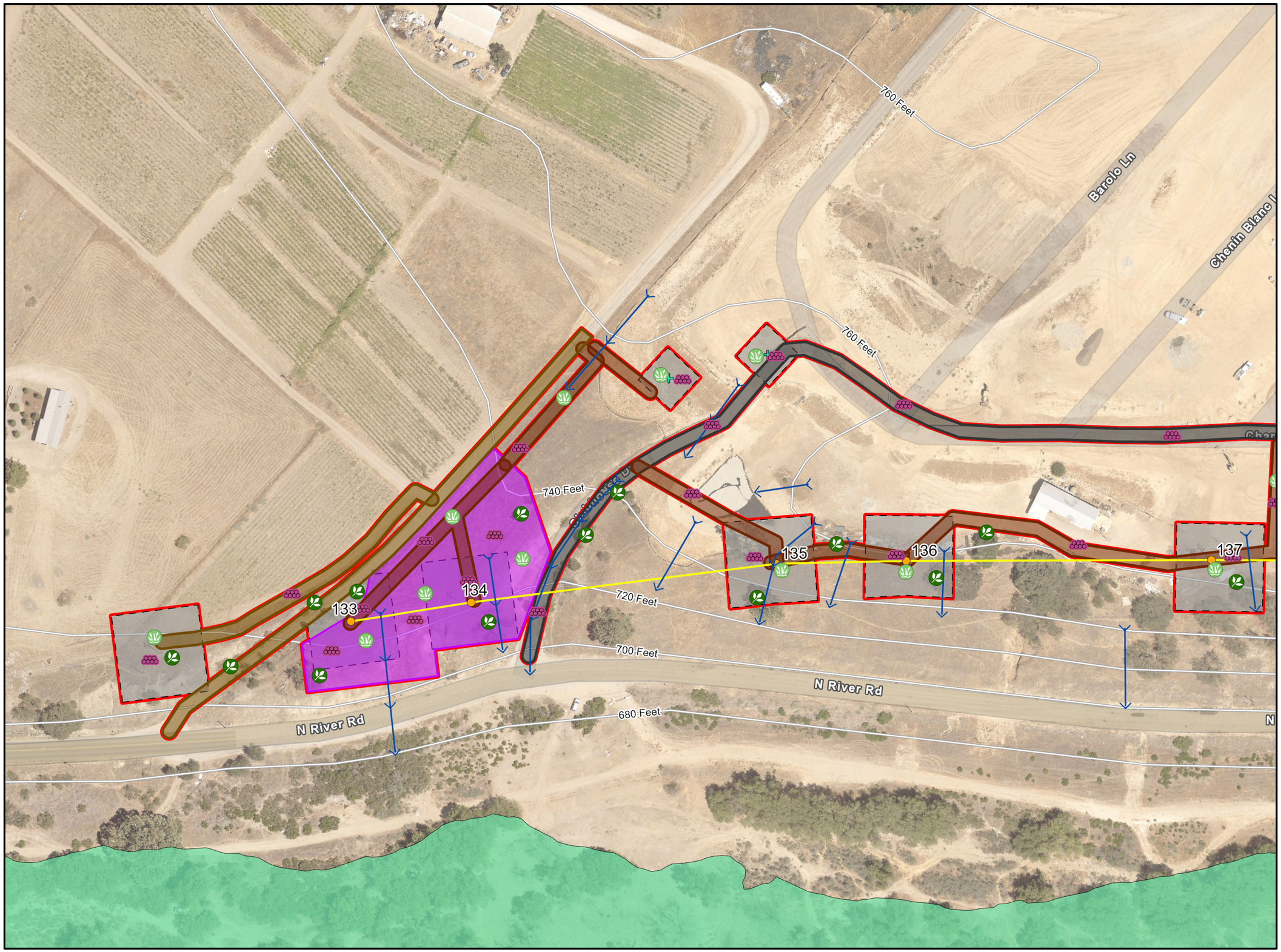
- Existing Paved
- Existing Unpaved
- New Unpaved

Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour



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0 20 40 60 80 Feet

1:1,300

Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-16 Non-Vegetated Stabilization
- Sheet Flow Direction

Phase 1 Project Components

- 70 kV Pole for Pole Replacement
- Temporary Distribution Pole
- Reconductoring Segement
- New Pole Permanent Work Area
- Pole Temporary Work Area
- Temporary Pull Sites
- Project Boundary

Phase 1 Project Components

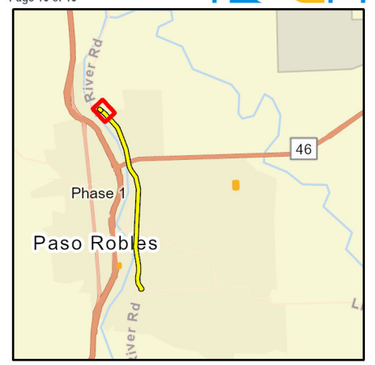
Access Roads

- Existing Paved
- Existing Unpaved
- New Unpaved

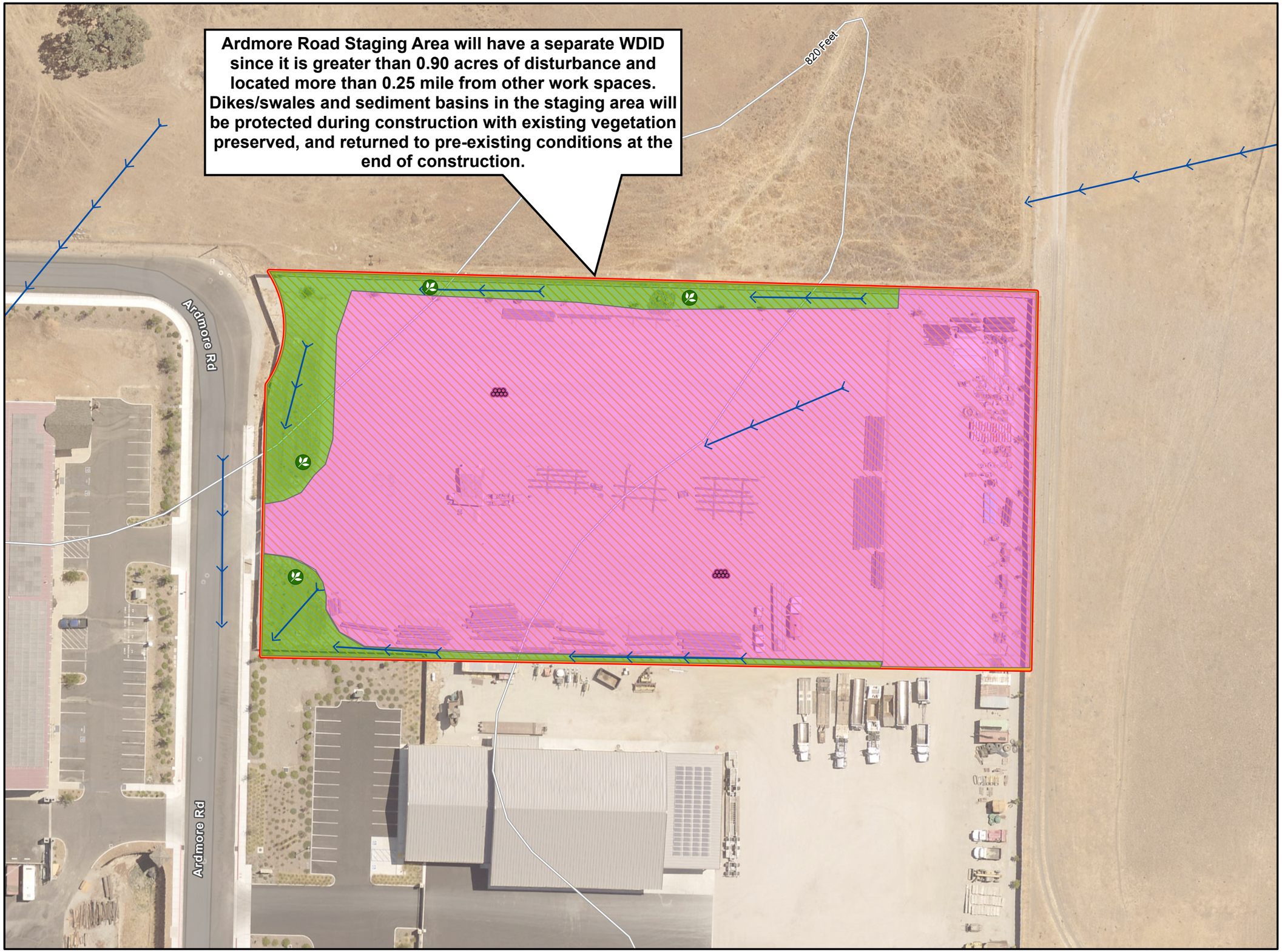
Jurisdictional Waters

- Salinas River Riparian Habitat
- Elevation Contour

PG&E



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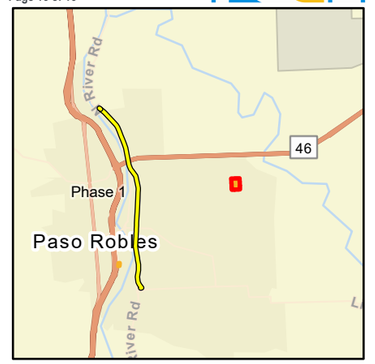
Estrella Substation and Paso Robles Area Reinforcement Project Reconductoring Segment (Phase 1) Ardmore Staging Area Post-Construction BMP Maps

CASQA BMPs

- EC-2 Preservation of Existing Vegetation
- EC-16 Non-Vegetated Stabilization
- EC-16 Non-Vegetated Stabilization
- EC-2 Preservation of Existing Vegetation
- Sheet Flow Direction

Phase 1 Project Components

- Potential Staging Yard
- Project Boundary
- Elevation Contour



Prepared by SWCA Environmental Consultants (2/3/2025, 4:25 PM) - EstrellaPLR1A_SWPPP - NAD 1983 StatePlane California V FIPS 0405 Feet - Aerial imagery source: Esri World Imagery (accessed 2/3/2025)

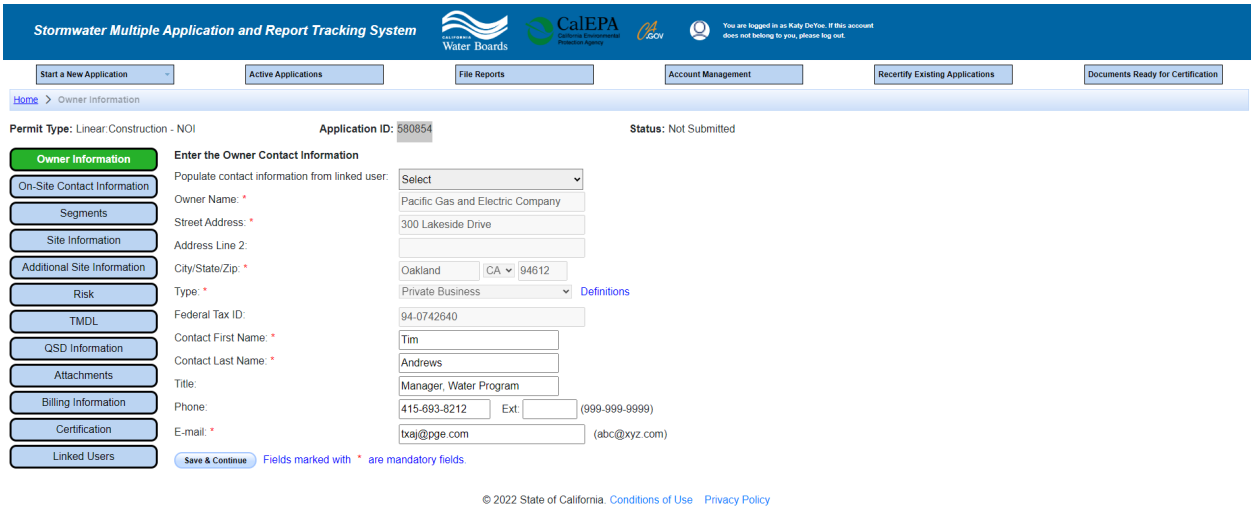
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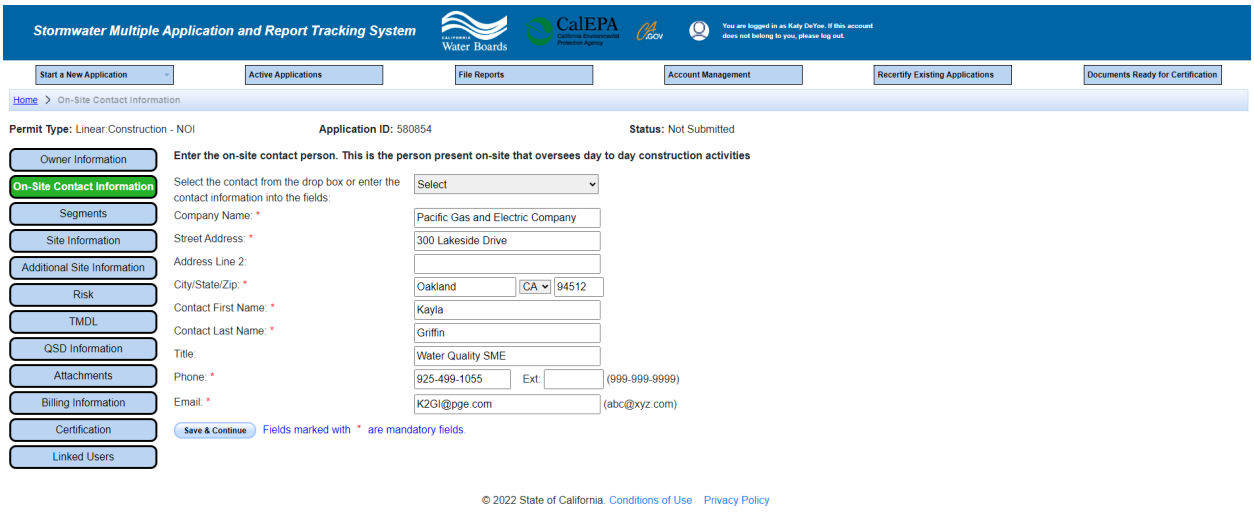
Applicable Permit Registration Documents (PRDs)

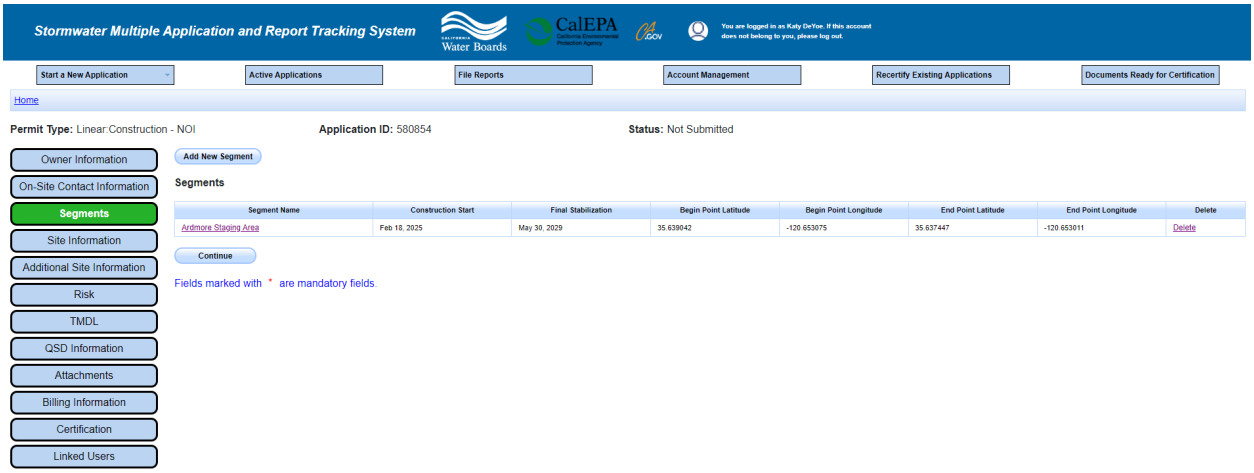
Notice of Intent (NOI)
WDID Receipt Letter
Risk Determination Documentation

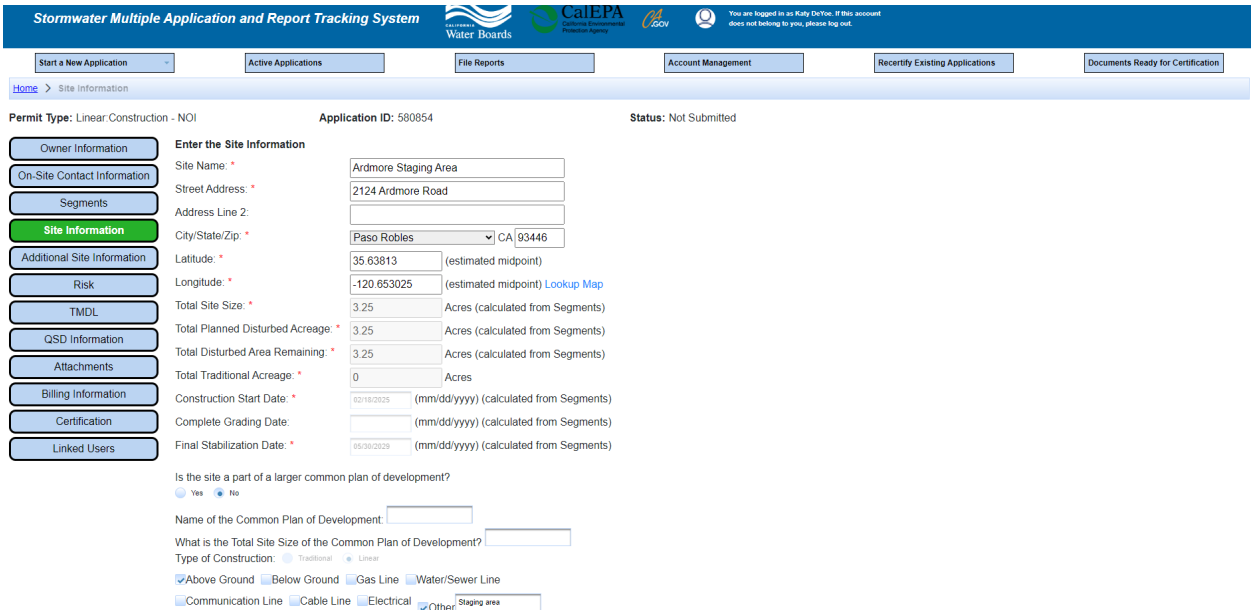
Pacific Gas and Electric Company®

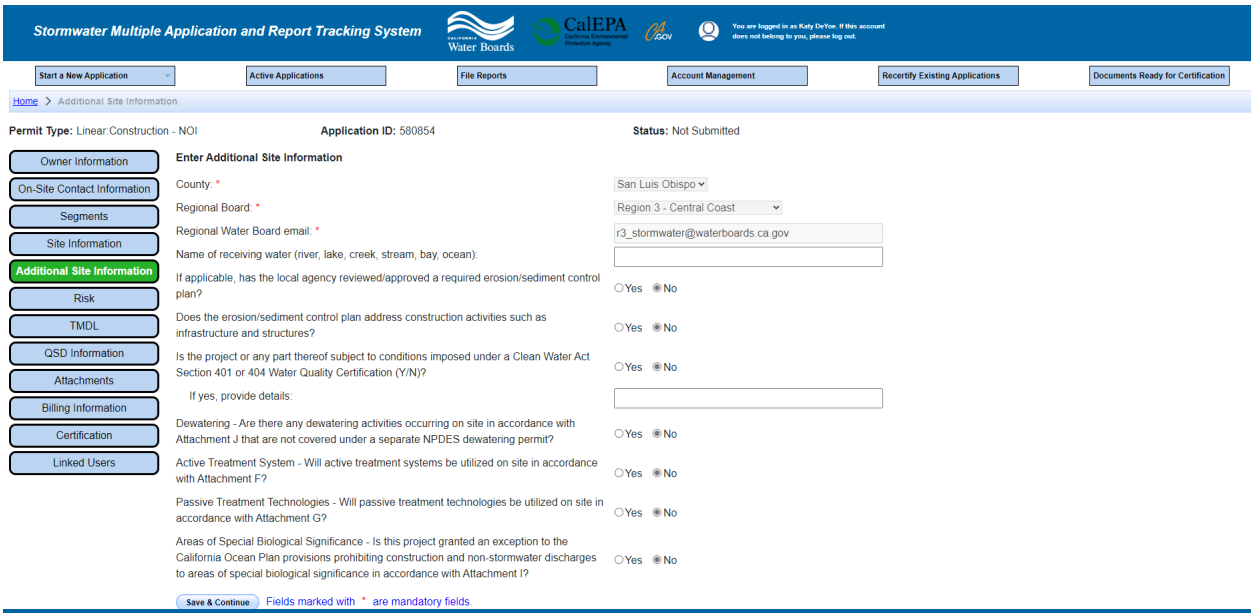
Application ID 580854: Ardmore Staging Area

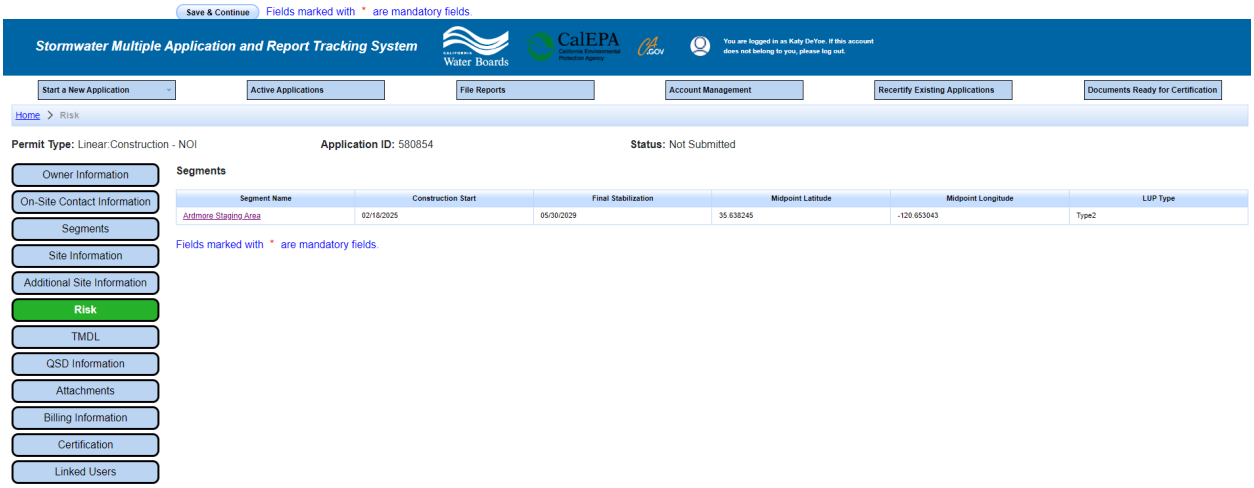




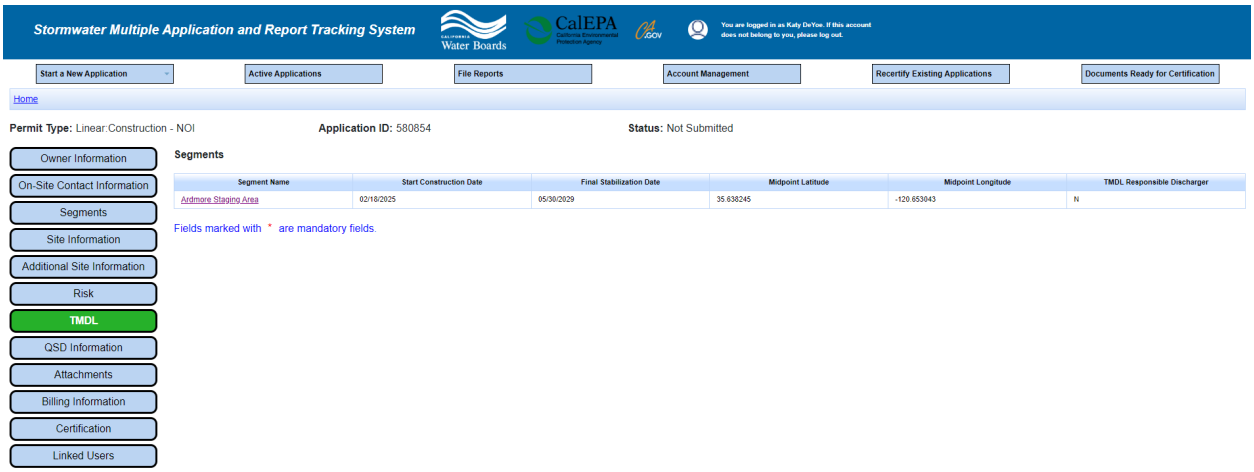

Stormwater Multiple Application and Report Tracking System
You are logged in as Katy DeYoe. If this account does not belong to you, please log out.
Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home
Permit Type: Linear:Construction - NOI
Application ID: 580854
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Add New Segment
Segments
Segment Name | Construction Start | Final Stabilization | Begin Point Latitude | Begin Point Longitude | End Point Latitude | End Point Longitude | Delete
Ardmore Staging Area | Feb 18, 2025 | May 30, 2029 | 35.639042 | -120.653075 | 35.637447 | -120.653011 | Delete
Continue
Fields marked with * are mandatory fields.
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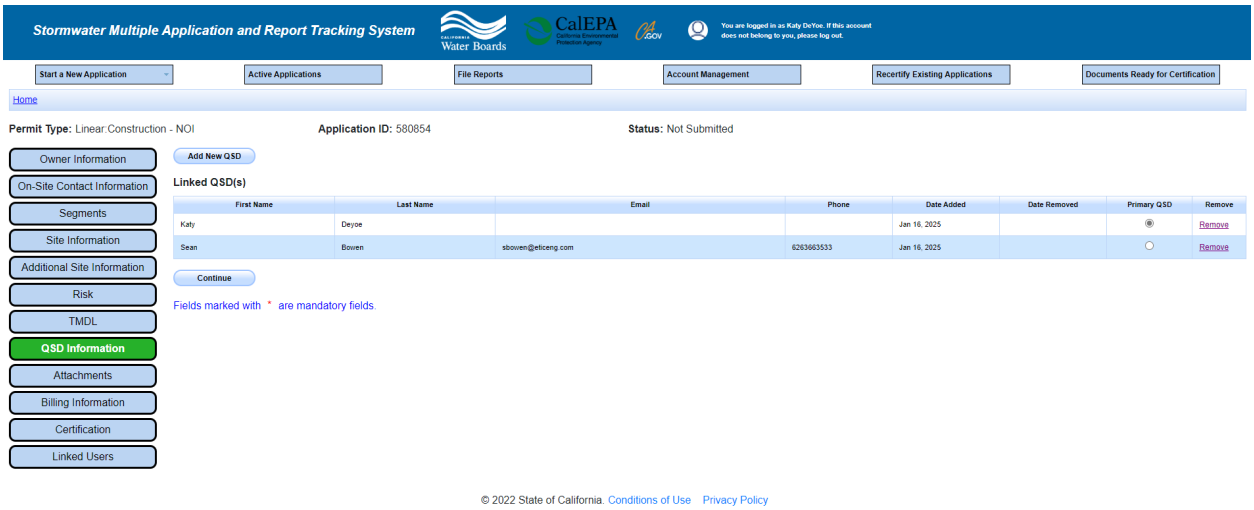

Stormwater Multiple Application and Report Tracking System
You are logged in as Katy DeYoe. If this account does not belong to you, please log out.
Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home > Site Information
Permit Type: Linear:Construction - NOI
Application ID: 580854
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Enter the Site Information
Site Name: * Ardmore Staging Area
Street Address: * 2124 Ardmore Road
Address Line 2:
City/State/Zip: * Paso Robles CA 93446
Latitude: * 35.63813 (estimated midpoint)
Longitude: * -120.653025 (estimated midpoint) Lookup Map
Total Site Size: * 3.25 Acres (calculated from Segments)
Total Planned Disturbed Acreage: * 3.25 Acres (calculated from Segments)
Total Disturbed Area Remaining: * 3.25 Acres (calculated from Segments)
Total Traditional Acreage: * 0 Acres
Construction Start Date: * 02/18/2025 (mm/dd/yyyy) (calculated from Segments)
Complete Grading Date: (mm/dd/yyyy) (calculated from Segments)
Final Stabilization Date: * 05/30/2029 (mm/dd/yyyy) (calculated from Segments)
Is the site a part of a larger common plan of development?
Yes No
Name of the Common Plan of Development:
What is the Total Site Size of the Common Plan of Development?
Type of Construction: Traditional Linear
Above Ground Below Ground Gas Line Water/Sewer Line
Communication Line Cable Line Electrical Other Staging area



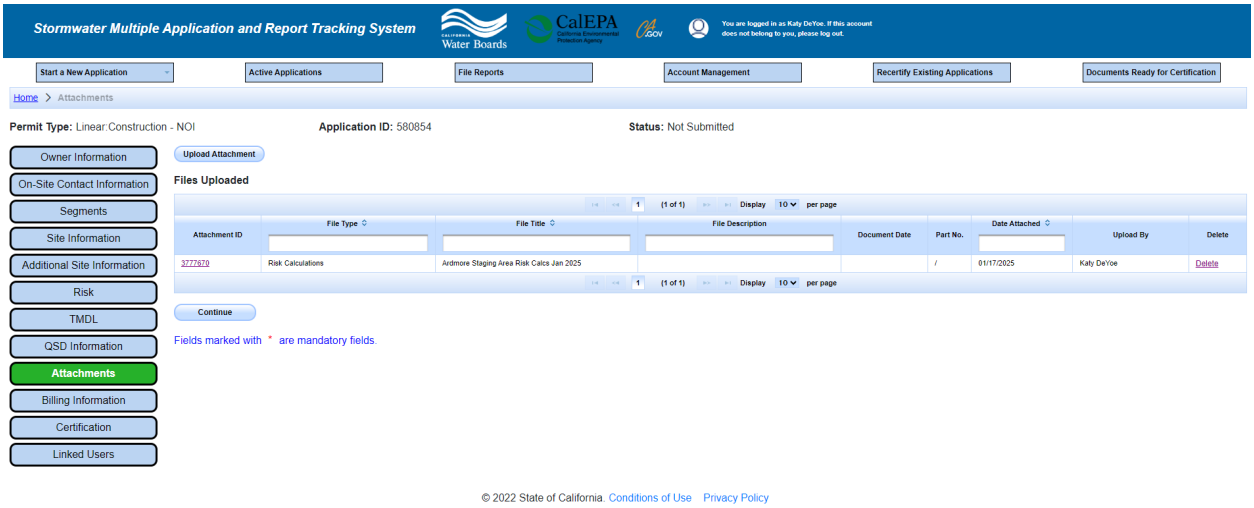


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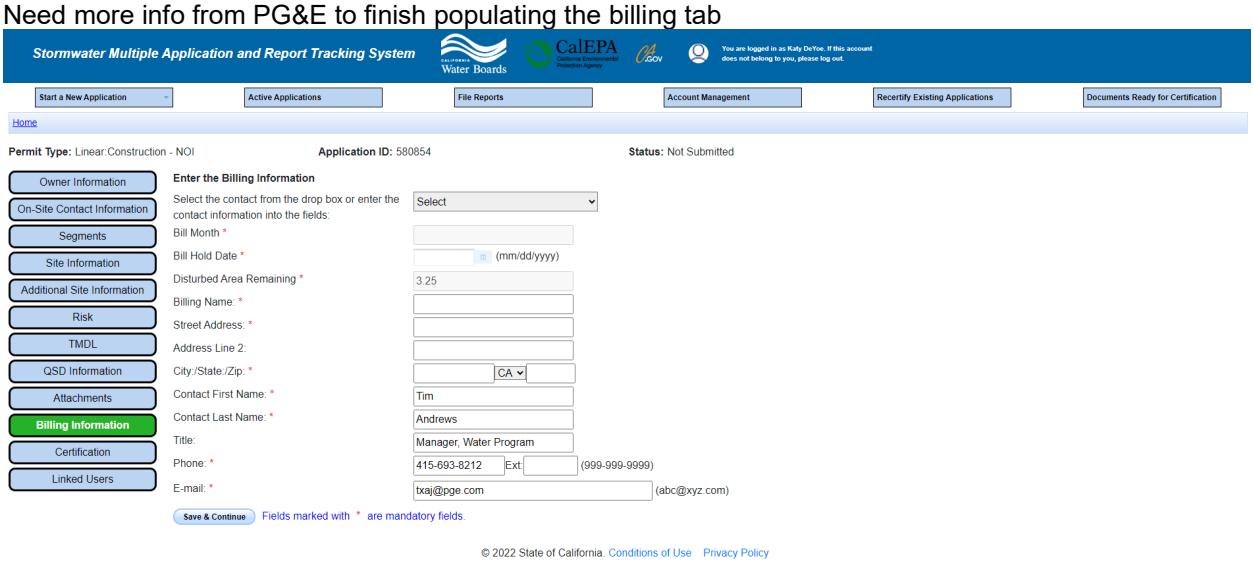

Stormwater Multiple Application and Report Tracking System
Water Boards
CalEPA
You are logged in as Katy DeYoe. If this account does not belong to you, please log out.
Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home
Permit Type: Linear Construction - NOI
Application ID: 580854
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Segments
Segment Name
Start Construction Date
Final Stabilization Date
Midpoint Latitude
Midpoint Longitude
TMDL Responsible Discharger
Ardmore Staging Area
02/18/2025
05/30/2029
35.638245
-120.653043
N
Fields marked with * are mandatory fields.
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Stormwater Multiple Application and Report Tracking System
Water Boards
CalEPA
You are logged in as Katy DeYoe. If this account does not belong to you, please log out.
Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home
Permit Type: Linear Construction - NOI
Application ID: 580854
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Add New QSD
Linked QSD(s)
First Name
Last Name
Email
Phone
Date Added
Date Removed
Primary QSD
Remove
Katy
Deyoe
Jan 16, 2025
Remove
Sean
Bowen
sbowen@eliceng.com
6263663533
Jan 16, 2025
Remove
Continue
Fields marked with * are mandatory fields.
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Once SWPPP is approved, including site maps, by PG&E it will be attached.



Need more info from PG&E to finish populating the billing tab



Permit Type: Linear Construction - NOI **Application ID:** 580854 **Status:** Not Submitted

Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users

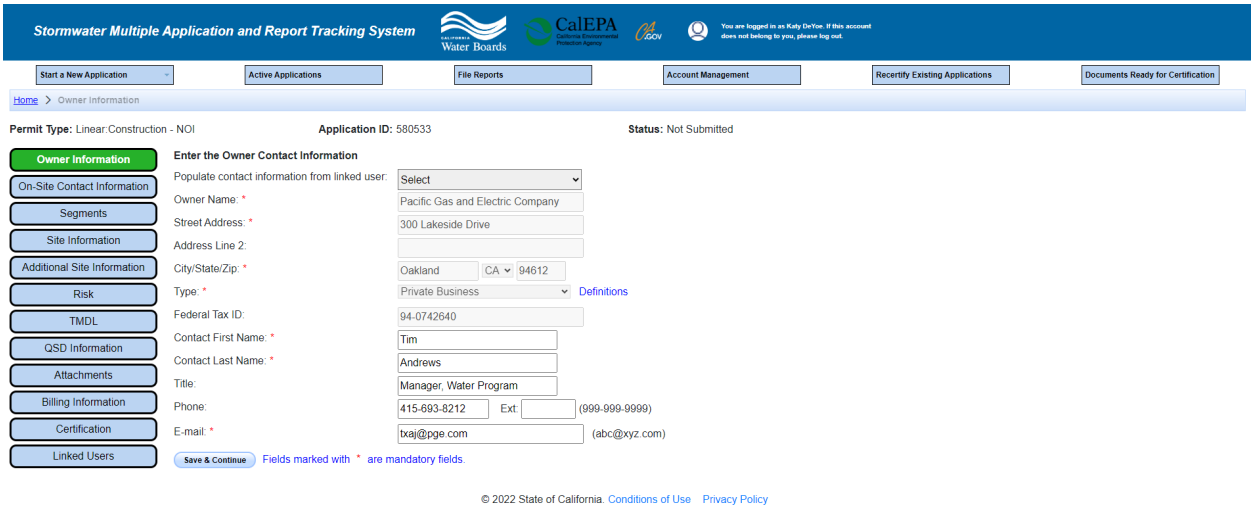
The application appears to be incomplete. Please correct the errors shown below before the application can be certified.

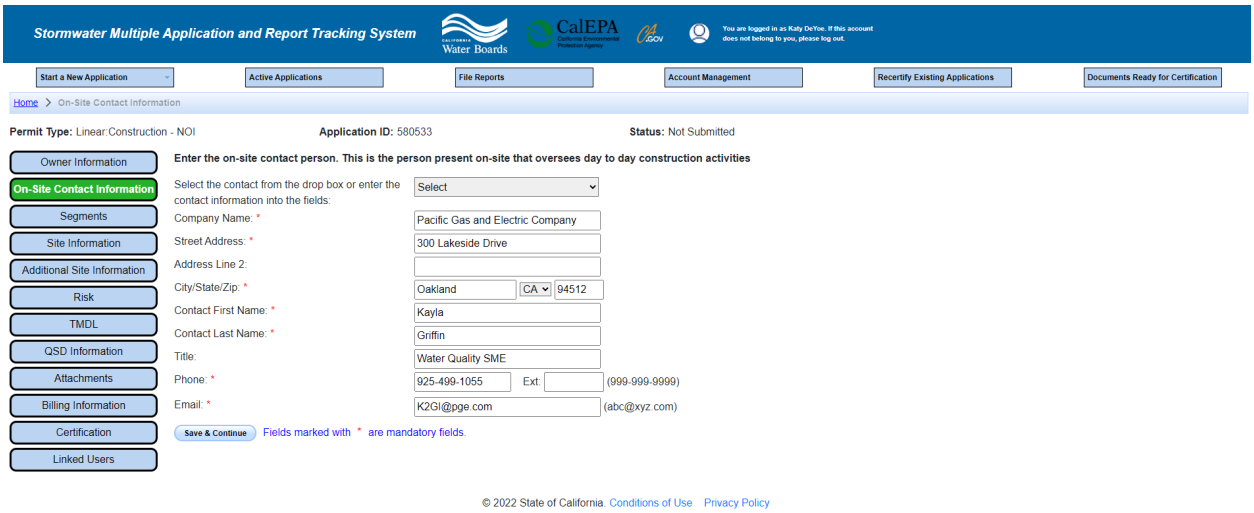
Error Message	Tab to Correct
Required Document: Facility/Site Map. Please upload a Facility/Site Map on the Attachments tab and verify the correct File Type is selected.	Attachments
Required Document: SWPPP. Please upload a SWPPP on the Attachments tab and verify the correct File Type is selected.	Attachments
Billing Name on the Billing Information tab is a required field.	Billing Information
City on the Billing Information tab is a required field.	Billing Information
Street Address on the Billing Information tab is a required field.	Billing Information
Zip on the Billing Information tab is a required field.	Billing Information

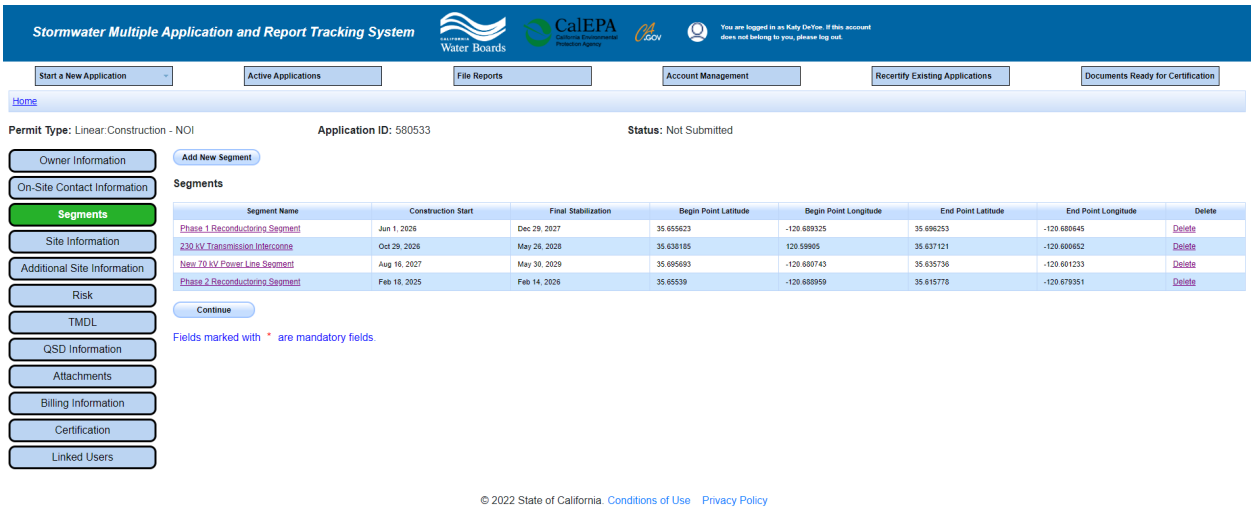
Fields marked with * are mandatory fields.

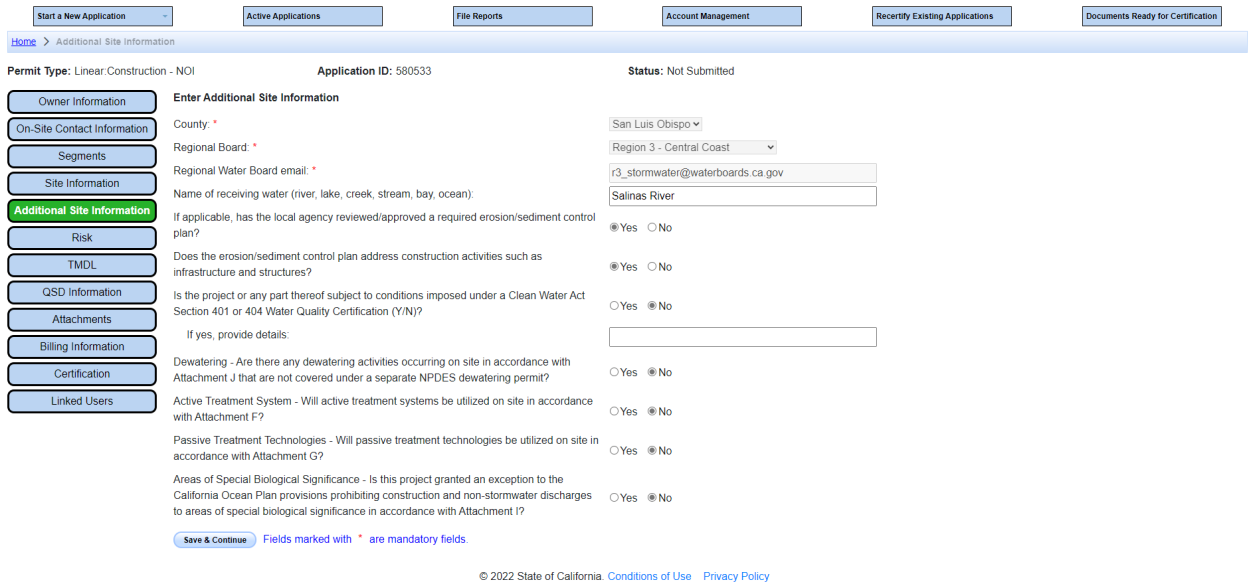
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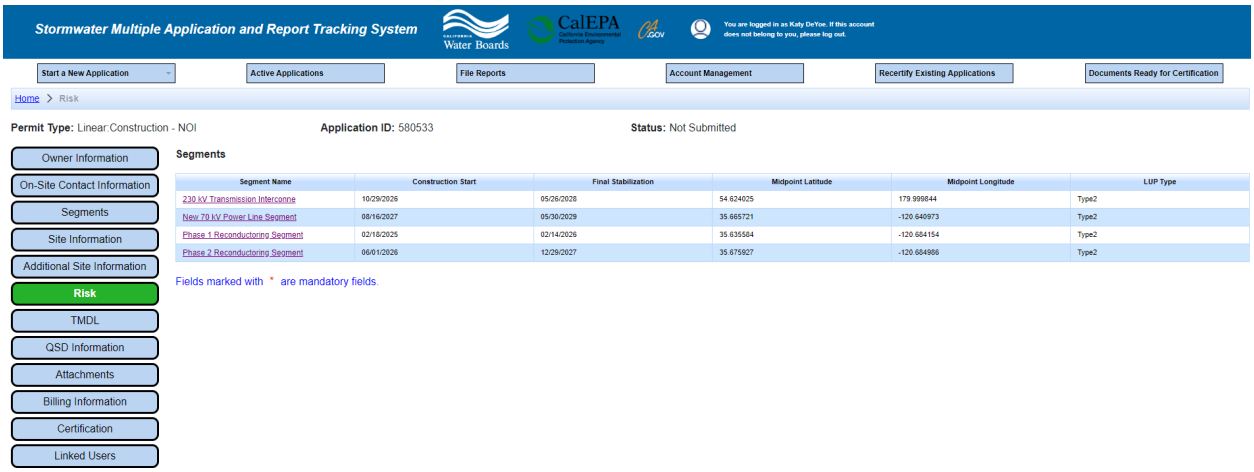
Application ID 580533: Estrella Substation and Paso Robles Area Reinforcement

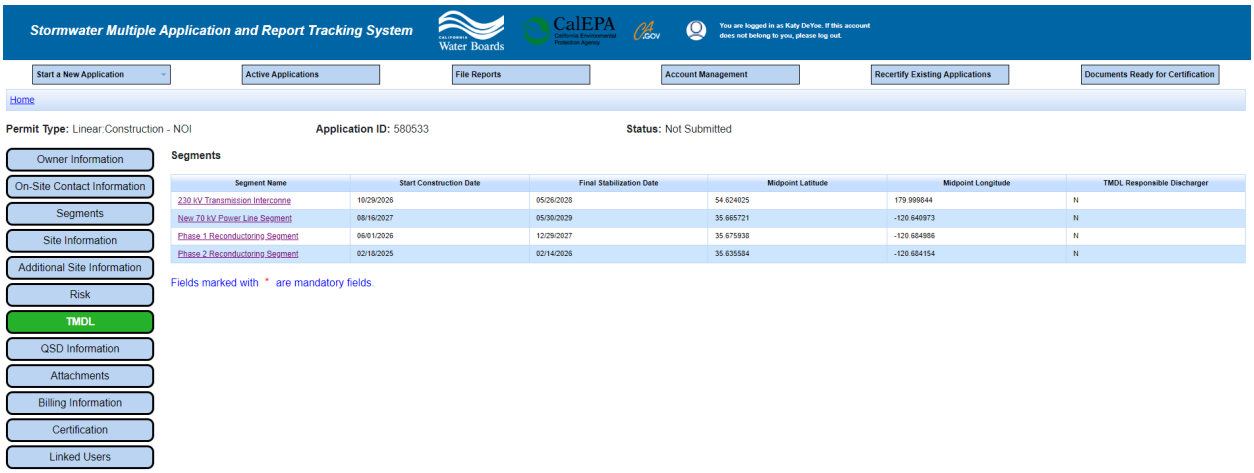


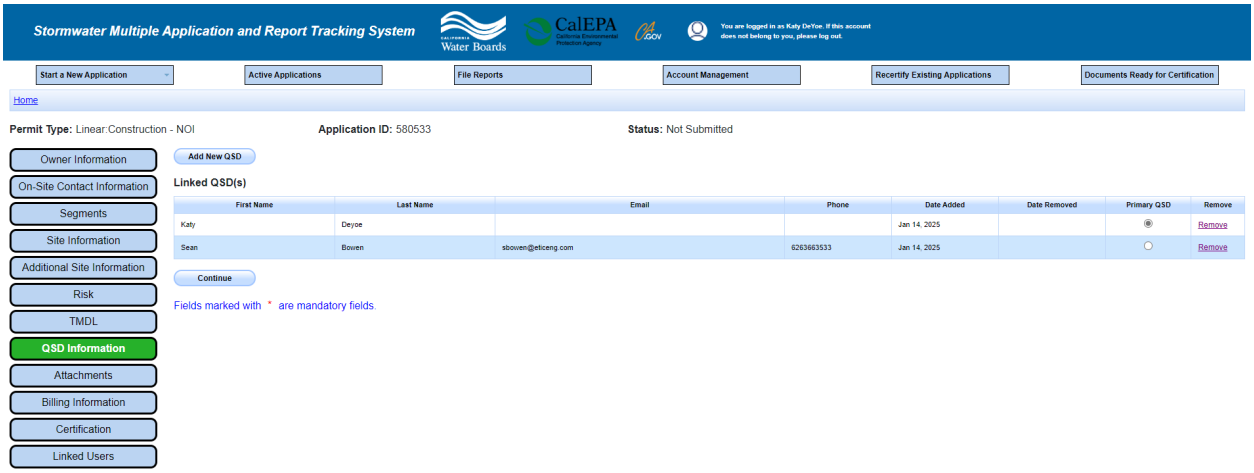


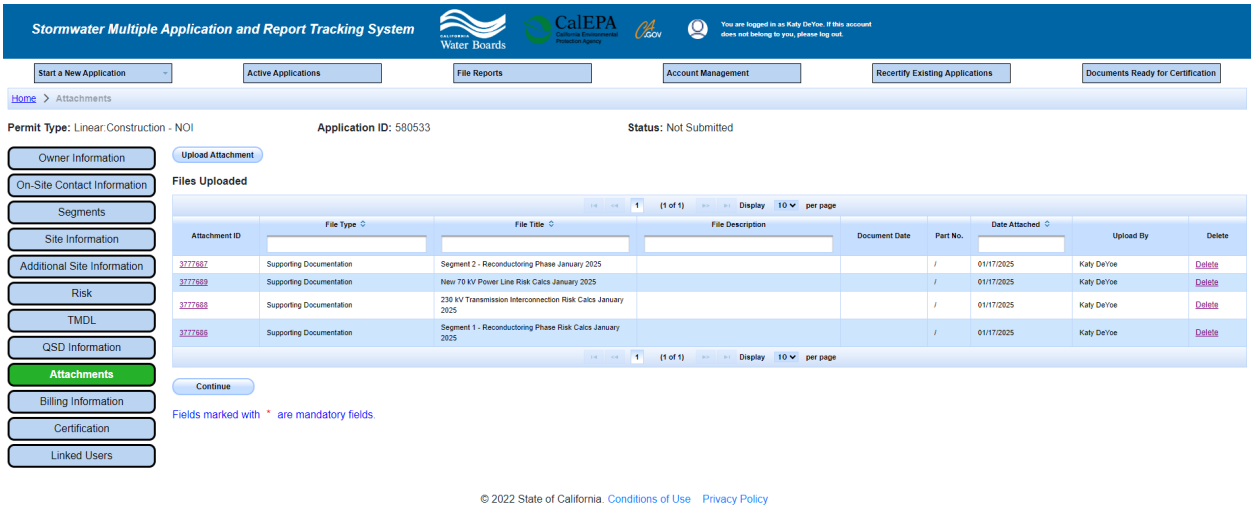

Stormwater Multiple Application and Report Tracking System
Water Boards
CalEPA
You are logged in as Katy DeYoe. If this account does not belong to you, please log out.
Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home
Permit Type: Linear:Construction - NOI
Application ID: 580533
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Add New Segment
Segments
Segment Name | Construction Start | Final Stabilization | Begin Point Latitude | Begin Point Longitude | End Point Latitude | End Point Longitude | Delete
Phase 1 Reconductoring Segment | Jun 1, 2026 | Dec 29, 2027 | 35.655623 | -120.689325 | 35.696253 | -120.680645 | Delete
230 kV Transmission Interconne | Oct 29, 2026 | May 26, 2028 | 35.638185 | 120.59905 | 35.637121 | -120.680652 | Delete
New 70 kV Power Line Segment | Aug 16, 2027 | May 30, 2029 | 35.695693 | -120.680743 | 35.635736 | -120.681233 | Delete
Phase 2 Reconductoring Segment | Feb 18, 2025 | Feb 14, 2026 | 35.65539 | -120.688959 | 35.615778 | -120.679351 | Delete
Continue
Fields marked with * are mandatory fields.
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Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home > Additional Site Information
Permit Type: Linear:Construction - NOI
Application ID: 580533
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Enter Additional Site Information
County: * San Luis Obispo
Regional Board: * Region 3 - Central Coast
Regional Water Board email: * r3_stormwater@waterboards.ca.gov
Name of receiving water (river, lake, creek, stream, bay, ocean): Salinas River
If applicable, has the local agency reviewed/approved a required erosion/sediment control plan? Yes No
Does the erosion/sediment control plan address construction activities such as infrastructure and structures? Yes No
Is the project or any part thereof subject to conditions imposed under a Clean Water Act Section 401 or 404 Water Quality Certification (Y/N)? Yes No
If yes, provide details:
Dewatering - Are there any dewatering activities occurring on site in accordance with Attachment J that are not covered under a separate NPDES dewatering permit? Yes No
Active Treatment System - Will active treatment systems be utilized on site in accordance with Attachment F? Yes No
Passive Treatment Technologies - Will passive treatment technologies be utilized on site in accordance with Attachment G? Yes No
Areas of Special Biological Significance - Is this project granted an exception to the California Ocean Plan provisions prohibiting construction and non-stormwater discharges to areas of special biological significance in accordance with Attachment I? Yes No
Save & Continue
Fields marked with * are mandatory fields.
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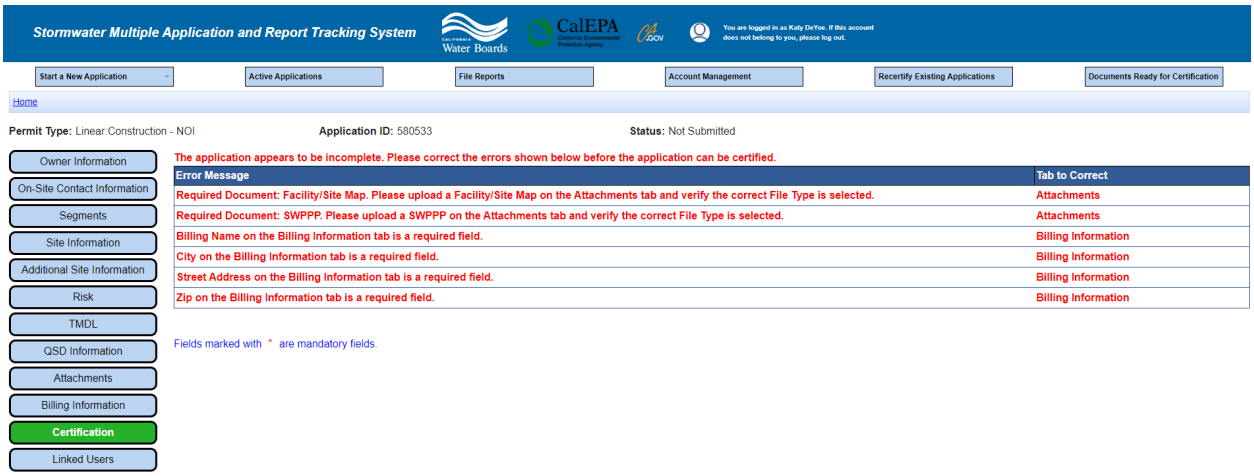

Stormwater Multiple Application and Report Tracking System
Water Boards
CalEPA
You are logged in as Katy DeYoe. If this account does not belong to you, please log out.
Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home > Risk
Permit Type: Linear:Construction - NOI
Application ID: 580533
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Segments
Segment Name | Construction Start | Final Stabilization | Midpoint Latitude | Midpoint Longitude | LUP Type
230 kV Transmission Interconne | 10/29/2026 | 05/26/2028 | 54.624025 | 179.999844 | Type2
New 70 kV Power Line Segment | 08/16/2027 | 05/30/2029 | 35.665721 | -120.640973 | Type2
Phase 1 Reconductoring Segment | 02/18/2025 | 02/14/2026 | 35.635584 | -120.684154 | Type2
Phase 2 Reconductoring Segment | 06/01/2026 | 12/29/2027 | 35.675927 | -120.684986 | Type2
Fields marked with * are mandatory fields.
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Stormwater Multiple Application and Report Tracking System
Water Boards
CalEPA
You are logged in as Katy DeYoe. If this account does not belong to you, please log out.
Start a New Application
Active Applications
File Reports
Account Management
Recertify Existing Applications
Documents Ready for Certification
Home
Permit Type: Linear:Construction - NOI
Application ID: 580533
Status: Not Submitted
Owner Information
On-Site Contact Information
Segments
Site Information
Additional Site Information
Risk
TMDL
QSD Information
Attachments
Billing Information
Certification
Linked Users
Segments
Segment Name | Start Construction Date | Final Stabilization Date | Midpoint Latitude | Midpoint Longitude | TMDL Responsible Discharger
230 kV Transmission Interconne | 10/29/2026 | 05/26/2028 | 54.624025 | 179.999844 | N
New 70 kV Power Line Segment | 08/16/2027 | 05/30/2029 | 35.665721 | -120.640973 | N
Phase 1 Reconductoring Segment | 06/01/2026 | 12/29/2027 | 35.675938 | -120.684986 | N
Phase 2 Reconductoring Segment | 02/18/2025 | 02/14/2026 | 35.635584 | -120.684154 | N
Fields marked with * are mandatory fields.
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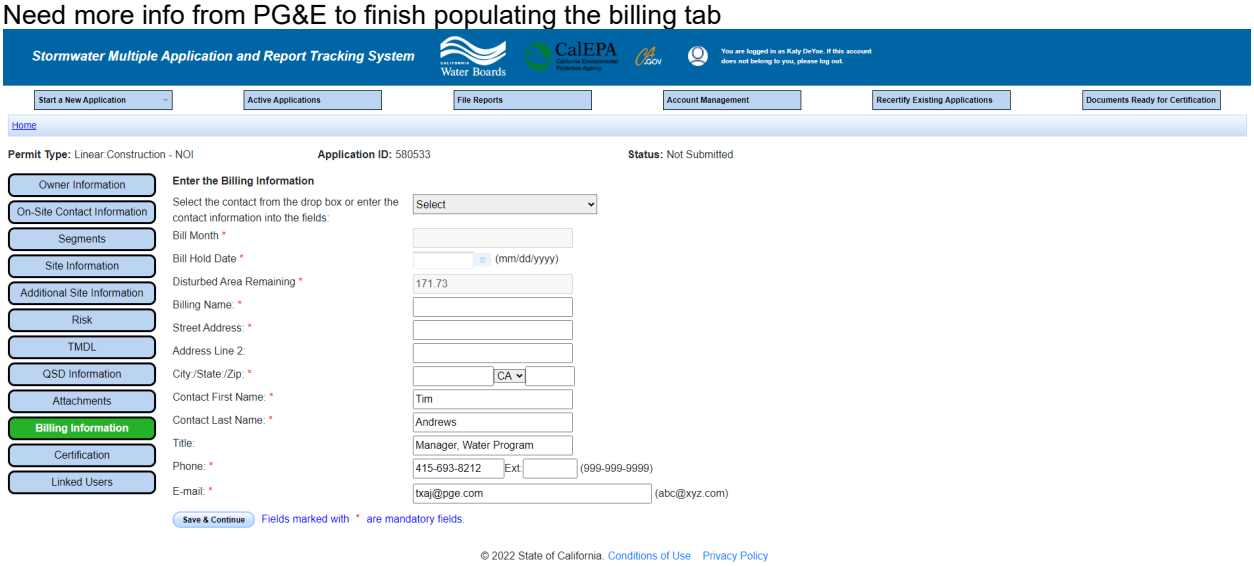




Once SWPPP is approved, including site maps, by PG&E it will be attached.



Need more info from PG&E to finish populating the billing tab



GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER NO. 2022-0057-DWQ)

WDID: 3 40C406178

Initial Application Questions

Type: Linear
Sub-type: Above Ground and Other:Staging area
Is the applicant an eligible Discharger as defined in Attachment B (Glossary) for this project? Y
Is the site a part of larger common plan of development? N
Name of the Common Plan of Development:
What is the Total Site Size of the Common Plan of Development?
Is the Construction project separated into phases? N

Owner Information

Owner Name: Pacific Gas and Electric Company
Street Address: 300 Lakeside Drive
Address Line 2:
City, State, Zip: Oakland, CA, 94612
Title: Manager, Water Program
Contact Name: Tim Andrews
Phone Number: 415-693-8212
Email Address: txaj@pge.com

On-Site Contact Information

Company Name: Pacific Gas and Electric Company
Street Address: 9575 East Victor Road
Address Line 2:
City, State, Zip: Lodi, CA, 95240
Contact Name: Phil Shepherd
Title: Project Manager
Phone Number: 2093238622
Email Address: PCS6@pge.com

Segments

Segment Name	Construction Start	Final Stabilization	Begin Latitude	Begin Longitude	End Latitude	End Longitude	LUP type
Ardmore Staging Area	2025-02-18	2029-05-30	35.639042	-120.653075	35.637447	-120.653011	Type2

Site Information

Site Name: Estrella Substation and Paso Robles Area Reinforcement - Staging Area
Street Address: 2124 Ardmore Road
Address Line 2:
City, State, Zip: Paso Robles, CA, 93446
Latitude: 35.63813
Longitude: -120.653025
Total Site Size: 3.25
Total Planned Disturbed Acreage: 3.25
Disturbed Area Remaining: 3.25
Construction Start Date: 2025-02-18
Complete Grading Date:
Final Stabilization Date: 2029-05-30
Is the site a part of a larger common plan of development? No
Name of Common Plan of Development:
Total Site Size of Common Plan of Development:
Type of Construction: Linear

Additional Site Information

County: San Luis Obispo
Regional Board: Region 3 - Central Coast
Regional Water Board Email: r3_stormwater@waterboards.ca.gov
Receiving Water:
401/404: N
Dewatering: N
Active Treatment System: N
Passive Treatment Technologies: N
Areas of Special Biological Significance: N

Risk

Please refer back to the “Segments” section and table for each segment’s LUP risk type.

TMDL Requirements

There are no TMDL parameters indicated at this time.

QSD Information

Primary QSD: Katy Deyoe
Other QSD(s): Sean Bowen

Attachments

Attachment ID	File Name	File Hash	File Size	Date Attached	Attachment Type
3786622	NOI_COR.zip	19df5c6124b4b28bbb7b287918c8bbfd225426bbbe7ac1d48d09b8bfafd4fc7	196232895		Application COR Zip
3786150	PRD Site Maps	28a119a333bd9df3f8ec44ac306ba6f8d4eec1a9af72477ecbdb2883f4297237	82124635		Facility/Site Map
3786148	PRD SWPPP	14d028a89d23177865a63b1cb93cbaa8d4812e3bc3fdee445447c9530a8e2ae	950821		SWPPP
3786149	PRD SWPPP	468efff9956cfbd35d655887b317b5686cd94f9e64bb8ba6d12157a49c18f	121948796		SWPPP

Certification

Name: Tim Andrews
Title: Manager, Water Program
Date: 2025-02-05 10:36:48.181

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER NO. 2022-0057-DWQ)

WDID: 3 40C406191

Initial Application Questions

Type: Linear
Sub-type: Above Ground and Electrical
Is the applicant an eligible Discharger as defined in Attachment B (Glossary) for this project? Y
Is the site a part of larger common plan of development? N
Name of the Common Plan of Development:
What is the Total Site Size of the Common Plan of Development?
Is the Construction project separated into phases? Y

Owner Information

Owner Name: Pacific Gas and Electric Company
Street Address: 300 Lakeside Drive
Address Line 2:
City, State, Zip: Oakland, CA, 94612
Title: Manager, Water Program
Contact Name: Tim Andrews
Phone Number: 415-693-8212
Email Address: txaj@pge.com

On-Site Contact Information

Company Name: Pacific Gas and Electric Company
Street Address: 9575 East Victor Road
Address Line 2:
City, State, Zip: Lodi, CA, 95240
Contact Name: Phil Shepherd
Title: Project Manager
Phone Number: 209-323-8622
Email Address: PCS6@pge.com

Segments

Segment Name	Construction Start	Final Stabilization	Begin Latitude	Begin Longitude	End Latitude	End Longitude	LUP type
230 kV Transmission Interconne	2026-10-29	2028-05-26	35.638185	120.59905	35.637121	-120.600652	Type2
New 70 kV Power Line Segment	2027-08-16	2029-05-30	35.695693	-120.680743	35.635736	-120.601233	Type2
Phase 1 Reconductoring Segment	2025-02-18	2026-02-14	35.65539	-120.688959	35.615778	-120.679351	Type2
Phase 2 Reconductoring Segment	2026-06-01	2027-12-29	35.655623	-120.689325	35.696253	-120.680645	Type2

Site Information

Site Name: Estrella Substation and Paso Robles Area Reinforcement
Street Address: 101 Cary Street
Address Line 2:
City, State, Zip: Paso Robles, CA, 93446
Latitude: 35.637782
Longitude: -120.599891
Total Site Size: 171.73
Total Planned Disturbed Acreage: 171.73

Disturbed Area Remaining: 171.73
Construction Start Date: 2025-02-18
Complete Grading Date:
Final Stabilization Date: 2029-05-30
Is the site a part of a larger common plan of development? No
Name of Common Plan of Development:
Total Site Size of Common Plan of Development:
Type of Construction: Linear

Additional Site Information

County: San Luis Obispo
Regional Board: Region 3 - Central Coast
Regional Water Board Email: r3_stormwater@waterboards.ca.gov
Receiving Water: Salinas River
401/404: N
Dewatering: N
Active Treatment System: N
Passive Treatment Technologies: N
Areas of Special Biological Significance: N

Risk

Please refer back to the “Segments” section and table for each segment’s LUP risk type.

TMDL Requirements

There are no TMDL parameters indicated at this time.

QSD Information

Primary QSD: Katy Deyoe
Other QSD(s): Sean Bowen

Attachments

Attachment ID	File Name	File Hash	File Size	Date Attached	Attachment Type
3786615	NOI_COR.zip	c795dfb74d58f7faec9957966e2f20d3e4291b929af85881608e2d1bcc2a3df1	206362459		Application COR Zip
3786085	PRD Risk Calculations	a040c6c9a121497c639ccf6ad62683f30f92d169f8fbeded732b59159fbd41	10265226		Supporting Documentation
3786080	PRD Site Maps	28a119a333bd9df3f8ec44ac306ba6f8d4eec1a9af72477ecbdb2883f4297237	82124635		Facility/Site Map
3786079	PRD SWPPP	468efff9956cfbd35d655887b317b5686cd94f9e64bb8ba6d12157a49c18f	121948796		SWPPP
3786078	PRD SWPPP	14d028a89d23177865a63b1cb93cbaa8d4812e3bc3fdee445447c9530a8e2ae	950821		SWPPP

Certification

Name: Tim Andrews
Title: Manager, Water Program
Date: 2025-02-05 10:36:48.181

Approved Date: February 07, 2025

Tim Andrews
Pacific Gas and Electric Company
300 Lakeside Drive
Oakland CA 94612

RECEIPT OF YOUR NOTICE OF INTENT (NOI)

The State Water Resources Control Board (State Water Board) has received and processed your NOI to comply with the terms of the General Permit to Discharger Storm Water Associated with Construction Activity. Accordingly, you are required to comply with the permit requirements.

The Waste Discharger Identification (WDID) number is: **3 40C406178**
Please use this number in any future communication regarding this permit.

	SITE DESCRIPTION
OWNER:	Pacific Gas and Electric Company
ON-SITE CONTACT:	Pacific Gas and Electric Company
SITE INFORMATION:	Estrella Substation and Paso Robles Area Reinforcement - St 2124 Ardmore Road Paso Robles
TOTAL PLANNED DISTURBED ACREAGE:	3.25
CONSTRUCTION START:	February 18, 2025
FINAL STABILIZATION:	May 30, 2029
COUNTY:	San Luis Obispo

When the Owner changes, a new NOI, site map, and fee must be submitted by the new Owner. As the previous owner, you are required to submit a Notice of Termination (NOT) to the local Regional Water Board stating you no longer own or operate the Site and coverage under the General Permit is not required. Unless notified, you will continue and are responsible to pay the annual fee invoiced each January.

If you have any questions regarding permit requirements, please contact your Regional Water Board at 805-549-3147 . Please visit the storm water web site at http://www.waterboards.ca.gov/water_issues/programs/stormwater/ to obtain an NOT and other storm water related information and forms.

Sincerely,

Storm Water Section
Division of Water Quality

Approved Date: February 10, 2025

Tim Andrews
Pacific Gas and Electric Company
300 Lakeside Drive
Oakland CA 94612

RECEIPT OF YOUR NOTICE OF INTENT (NOI)

The State Water Resources Control Board (State Water Board) has received and processed your NOI to comply with the terms of the General Permit to Discharger Storm Water Associated with Construction Activity. Accordingly, you are required to comply with the permit requirements.

The Waste Discharger Identification (WDID) number is: **3 40C406191**
Please use this number in any future communication regarding this permit.

	SITE DESCRIPTION
OWNER:	Pacific Gas and Electric Company
ON-SITE CONTACT:	Pacific Gas and Electric Company
SITE INFORMATION:	Estrella Substation and Paso Robles Area Reinforcement 101 Cary Street Paso Robles
TOTAL PLANNED DISTURBED ACREAGE:	171.73
CONSTRUCTION START:	February 18, 2025
FINAL STABILIZATION:	May 30, 2029
COUNTY:	San Luis Obispo

When the Owner changes, a new NOI, site map, and fee must be submitted by the new Owner. As the previous owner, you are required to submit a Notice of Termination (NOT) to the local Regional Water Board stating you no longer own or operate the Site and coverage under the General Permit is not required. Unless notified, you will continue and are responsible to pay the annual fee invoiced each January.

If you have any questions regarding permit requirements, please contact your Regional Water Board at 805-549-3147 . Please visit the storm water web site at http://www.waterboards.ca.gov/water_issues/programs/stormwater/ to obtain an NOT and other storm water related information and forms.

Sincerely,

Storm Water Section
Division of Water Quality

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY
(WQ ORDER NO. 2022-0057-DWQ)

WDID: 3 40C406191

Initial Application Questions

Type: Linear
Sub-type: Above Ground and Electrical
Is the applicant an eligible Discharger as defined in Attachment B (Glossary) for this project? Y
Is the site a part of larger common plan of development? N
Name of the Common Plan of Development:
What is the Total Site Size of the Common Plan of Development?
Is the Construction project separated into phases? Y

Owner Information

Owner Name: Pacific Gas and Electric Company
Street Address: 300 Lakeside Drive
Address Line 2:
City, State, Zip: Oakland, CA, 94612
Title: Manager, Water Program
Contact Name: Tim Andrews
Phone Number: 415-693-8212
Email Address: txaj@pge.com

On-Site Contact Information

Company Name: Pacific Gas and Electric Company
Street Address: 9575 East Victor Road
Address Line 2:
City, State, Zip: Lodi, CA, 95240
Contact Name: Phil Shepherd
Title: Project Manager
Phone Number: 209-323-8622
Email Address: PCS6@pge.com

Segments

Segment Name	Construction Start	Final Stabilization	Begin Latitude	Begin Longitude	End Latitude	End Longitude	LUP type
230 kV Transmission Interconne	2026-10-29	2028-05-26	35.638185	120.59905	35.637121	-120.600652	Type2
New 70 kV Power Line Segment	2027-08-16	2029-05-30	35.695693	-120.680743	35.635736	-120.601233	Type2
Phase 1 Reconductoring Segment	2025-02-18	2026-02-14	35.65539	-120.688959	35.615778	-120.679351	Type2
Phase 2 Reconductoring Segment	2026-06-01	2027-12-29	35.655623	-120.689325	35.696253	-120.680645	Type2

Site Information

Site Name: Estrella Substation and Paso Robles Area Reinforcement
Street Address: 101 Cary Street
Address Line 2:
City, State, Zip: Paso Robles, CA, 93446
Latitude: 35.637782
Longitude: -120.599891
Total Site Size: 171.73
Total Planned Disturbed Acreage: 171.73

Disturbed Area Remaining: 171.73
Construction Start Date: 2025-02-18
Complete Grading Date:
Final Stabilization Date: 2029-05-30
Is the site a part of a larger common plan of development? No
Name of Common Plan of Development:
Total Site Size of Common Plan of Development:
Type of Construction: Linear

Additional Site Information

County: San Luis Obispo
Regional Board: Region 3 - Central Coast
Regional Water Board Email: r3_stormwater@waterboards.ca.gov
Receiving Water: Salinas River
401/404: N
Dewatering: N
Active Treatment System: N
Passive Treatment Technologies: N
Areas of Special Biological Significance: N

Risk

Please refer back to the “Segments” section and table for each segment’s LUP risk type.

TMDL Requirements

There are no TMDL parameters indicated at this time.

QSD Information

Primary QSD: Katy Deyoe
Other QSD(s): Sean Bowen

Attachments

Attachment ID	File Name	File Hash	File Size	Date Attached	Attachment Type
3786615	NOI_COR.zip	c795dfb74d58f7faec9957966e2f20d3e4291b929af85881608e2d1bcc2a3df1	206362459		Application COR Zip
3786085	PRD Risk Calculations	a040c6c9a121497c639ccf6ad62683f30f92d169f8fbeded732b59159fbd41	10265226		Supporting Documentation
3786080	PRD Site Maps	28a119a333bd9df3f8ec44ac306ba6f8d4eec1a9af72477ecbdb2883f4297237	82124635		Facility/Site Map
3786079	PRD SWPPP	468efff9956cfbd35d655887b317b5686cd94f9e64bb8ba6d12157a49c18f	121948796		SWPPP
3786078	PRD SWPPP	14d028a89d23177865a63b1cb93cbaa8d4812e3bc3fdee445447c9530a8e2ae	950821		SWPPP

Certification

Name: Tim Andrews
Title: Manager, Water Program
Date: 2025-02-05 10:36:48.181

Approved Date: February 07, 2025

Tim Andrews
Pacific Gas and Electric Company
300 Lakeside Drive
Oakland CA 94612

RECEIPT OF YOUR NOTICE OF INTENT (NOI)

The State Water Resources Control Board (State Water Board) has received and processed your NOI to comply with the terms of the General Permit to Discharger Storm Water Associated with Construction Activity. Accordingly, you are required to comply with the permit requirements.

The Waste Discharger Identification (WDID) number is: **3 40C406178**
Please use this number in any future communication regarding this permit.

	SITE DESCRIPTION
OWNER:	Pacific Gas and Electric Company
ON-SITE CONTACT:	Pacific Gas and Electric Company
SITE INFORMATION:	Estrella Substation and Paso Robles Area Reinforcement - St 2124 Ardmore Road Paso Robles
TOTAL PLANNED DISTURBED ACREAGE:	3.25
CONSTRUCTION START:	February 18, 2025
FINAL STABILIZATION:	May 30, 2029
COUNTY:	San Luis Obispo

When the Owner changes, a new NOI, site map, and fee must be submitted by the new Owner. As the previous owner, you are required to submit a Notice of Termination (NOT) to the local Regional Water Board stating you no longer own or operate the Site and coverage under the General Permit is not required. Unless notified, you will continue and are responsible to pay the annual fee invoiced each January.

If you have any questions regarding permit requirements, please contact your Regional Water Board at 805-549-3147 . Please visit the storm water web site at http://www.waterboards.ca.gov/water_issues/programs/stormwater/ to obtain an NOT and other storm water related information and forms.

Sincerely,

Storm Water Section
Division of Water Quality

Approved Date: February 10, 2025

Tim Andrews
Pacific Gas and Electric Company
300 Lakeside Drive
Oakland CA 94612

RECEIPT OF YOUR NOTICE OF INTENT (NOI)

The State Water Resources Control Board (State Water Board) has received and processed your NOI to comply with the terms of the General Permit to Discharger Storm Water Associated with Construction Activity. Accordingly, you are required to comply with the permit requirements.

The Waste Discharger Identification (WDID) number is: **3 40C406191**
Please use this number in any future communication regarding this permit.

	SITE DESCRIPTION
OWNER:	Pacific Gas and Electric Company
ON-SITE CONTACT:	Pacific Gas and Electric Company
SITE INFORMATION:	Estrella Substation and Paso Robles Area Reinforcement 101 Cary Street Paso Robles
TOTAL PLANNED DISTURBED ACREAGE:	171.73
CONSTRUCTION START:	February 18, 2025
FINAL STABILIZATION:	May 30, 2029
COUNTY:	San Luis Obispo

When the Owner changes, a new NOI, site map, and fee must be submitted by the new Owner. As the previous owner, you are required to submit a Notice of Termination (NOT) to the local Regional Water Board stating you no longer own or operate the Site and coverage under the General Permit is not required. Unless notified, you will continue and are responsible to pay the annual fee invoiced each January.

If you have any questions regarding permit requirements, please contact your Regional Water Board at 805-549-3147 . Please visit the storm water web site at http://www.waterboards.ca.gov/water_issues/programs/stormwater/ to obtain an NOT and other storm water related information and forms.

Sincerely,

Storm Water Section
Division of Water Quality

Pacific Gas and Electric Company®

Risk Determination

General Information			
Project/Site Name:	Estrella Substation and Paso Robles Area Reinforcement Project	Segment Name:	Reconductoring Segment (Phase 1)
Assessment Date:	January 30, 2025	Revision Date:	March 3, 2025
Completed By	Katy DeYoe, QSD/P	Revised By:	Katy DeYoe, QSD/P
Original Segment Start Date:	2/20/2025	Original Segment End Date:	2/14/2026
Revised Start Date:	9/15/2025	Revised End Date:	3/31/2026
Start Latitude:	35.655390	Start Longitude:	-120.688959
End Latitude:	35.615778	End Longitude:	-120.679351

Sediment Risk

R-Factor:	31.92
K-Factor:	0.28
LS-Factor:	2.77
RxKxLS:	24.757152
Sediment Risk:	**Medium**

RxKxLS	
<15	Low
15-75	Medium
>75	High

Receiving Water Risk

Receiving Water Risk:	**Medium**

Project is not in a Sediment Sensitive Watershed.	Low
In a Sediment Sensitive Watershed but not in the flood plain or flood prone area.	Medium
In the flood plain or flood prone area of a Sediment Sensitive Watershed.	High

Combined Risk

Project Type:	**2**

	Low	Med	High
Low	1	1	2
Med	1	2	3
High	2	3	3

Sediment Risk Calculation

R-Factor Documentation

Calculations are based on the center point of the line.

Year	2025	2026	Total
R-Factor	9.36	22.56	**31.92**

Source: US EPA Rainfall Erosivity Factor Calculator; March 3, 2025

Facility Information

Start Date: 09/15/2025	**Latitude:** 35.6365
End Date: 12/31/2025	**Longitude:** -120.6794

Calculation Results

Rainfall erosivity factor (R Factor) = 9.36

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2026	**Latitude:** 35.6365
End Date: 03/31/2026	**Longitude:** -120.6794

Calculation Results

Rainfall erosivity factor (R Factor) = 22.56

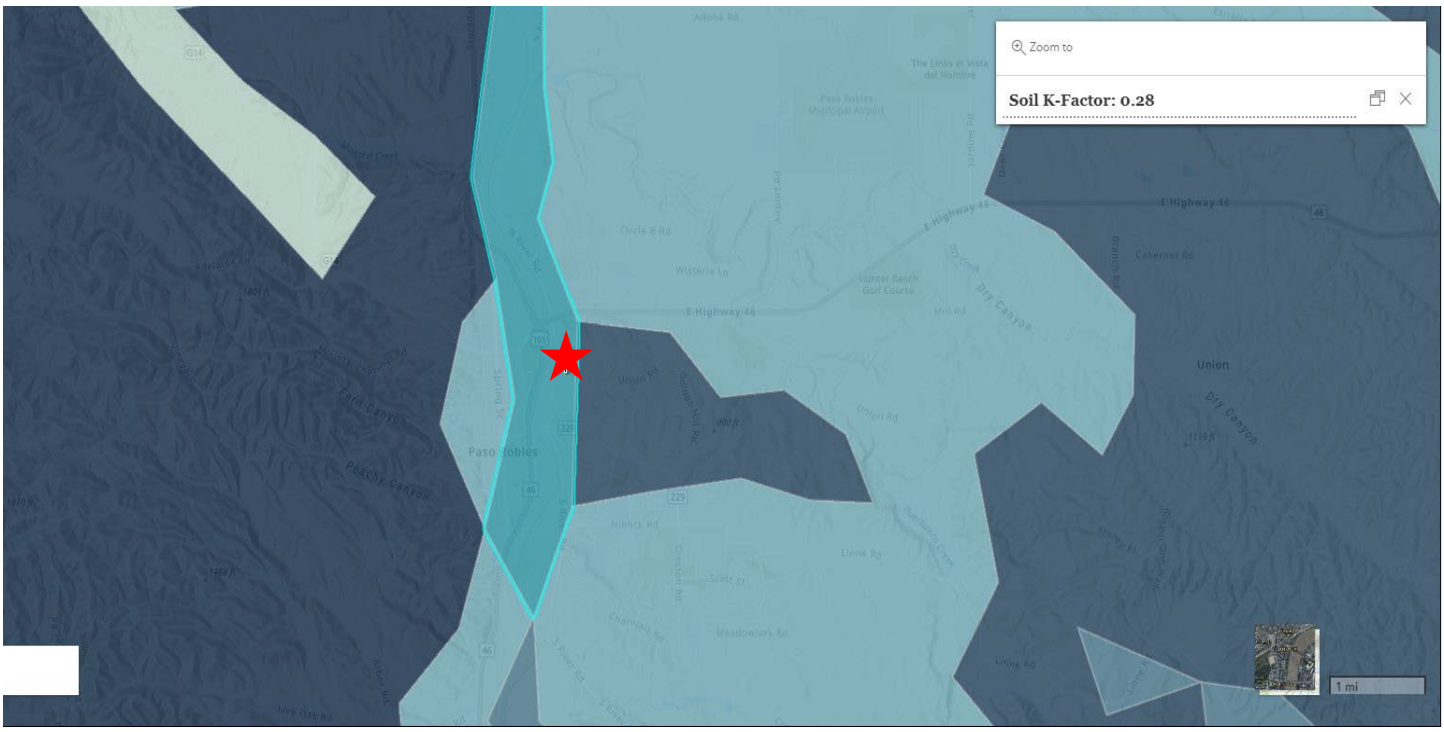
A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

K-Factor Documentation

Calculations are based on the center point of the line.

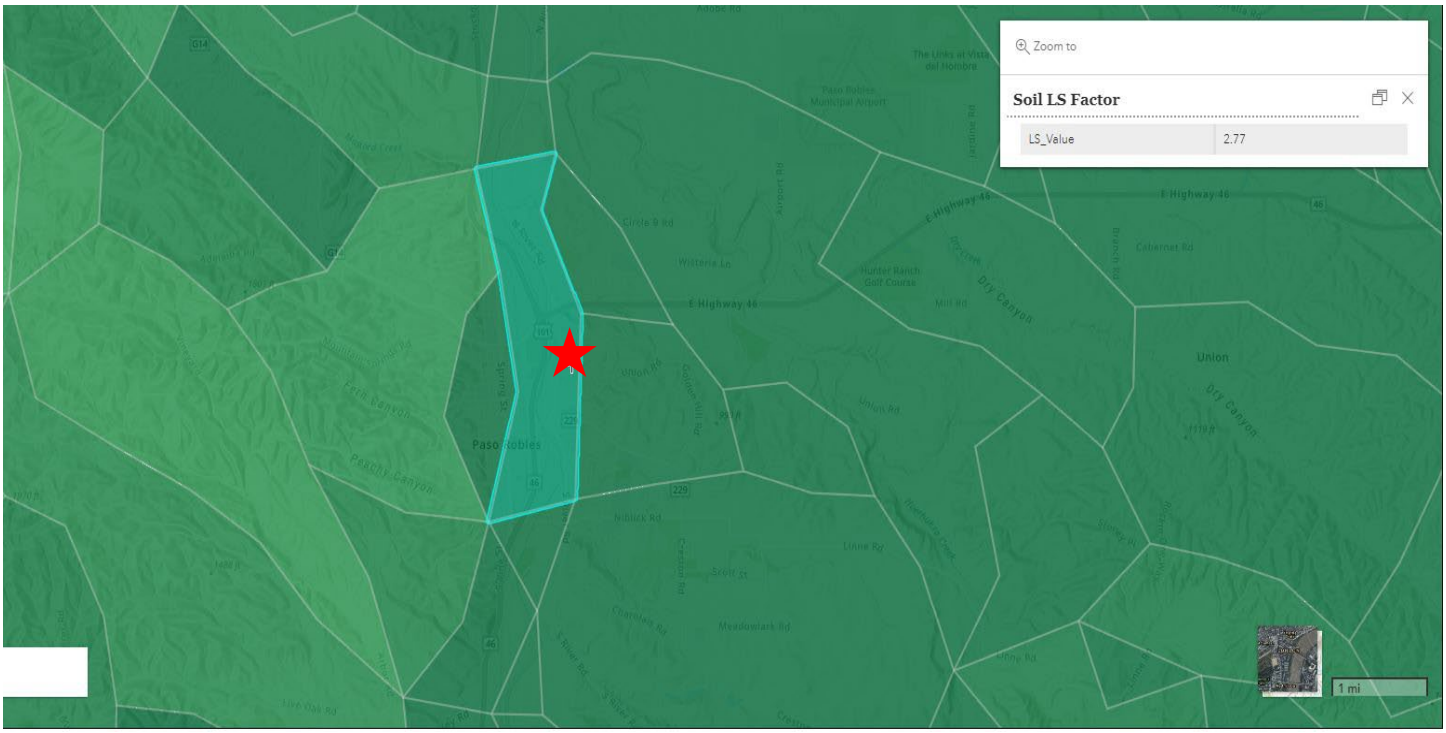
Source: Caltrans Water Quality Planning Tool; December 16, 2024



LS-Factor Documentation

Calculations are based on the center point of the line.

Source: Caltrans Water Quality Planning Tool; December 16, 2024

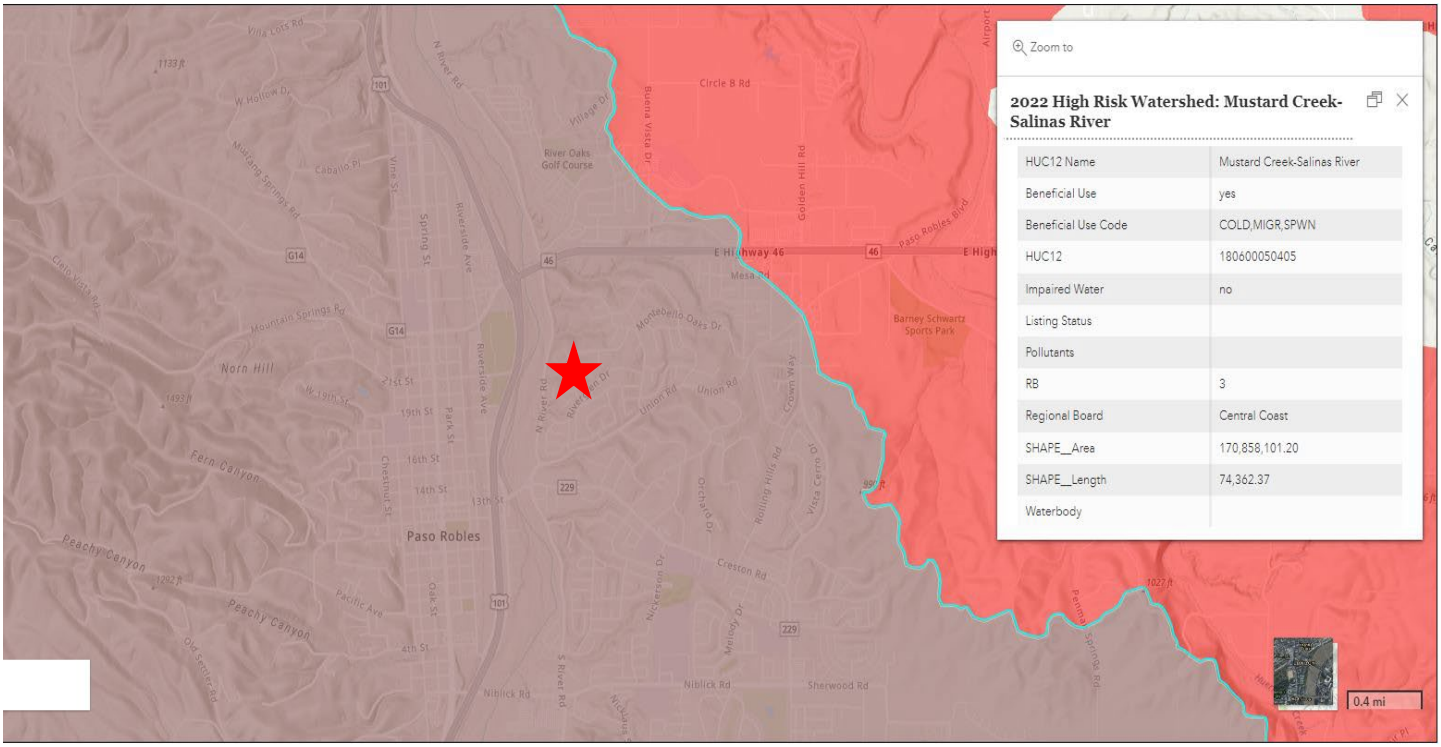


Receiving Water Risk Documentation

Calculations are based on the center point of the line.

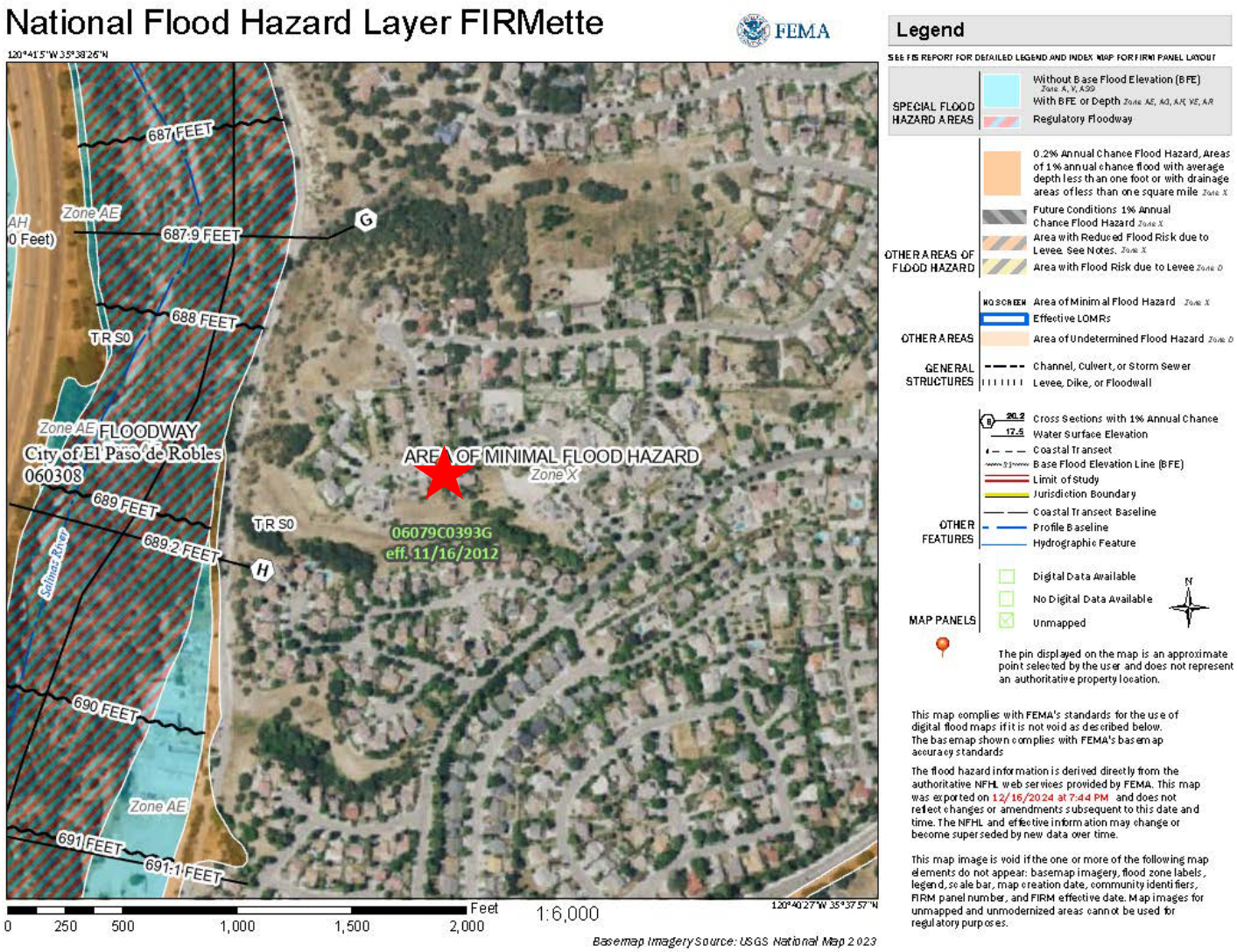
Sediment Sensitive Receiving Water Map

Source: Caltrans Water Quality Planning Tool; December 16, 2024

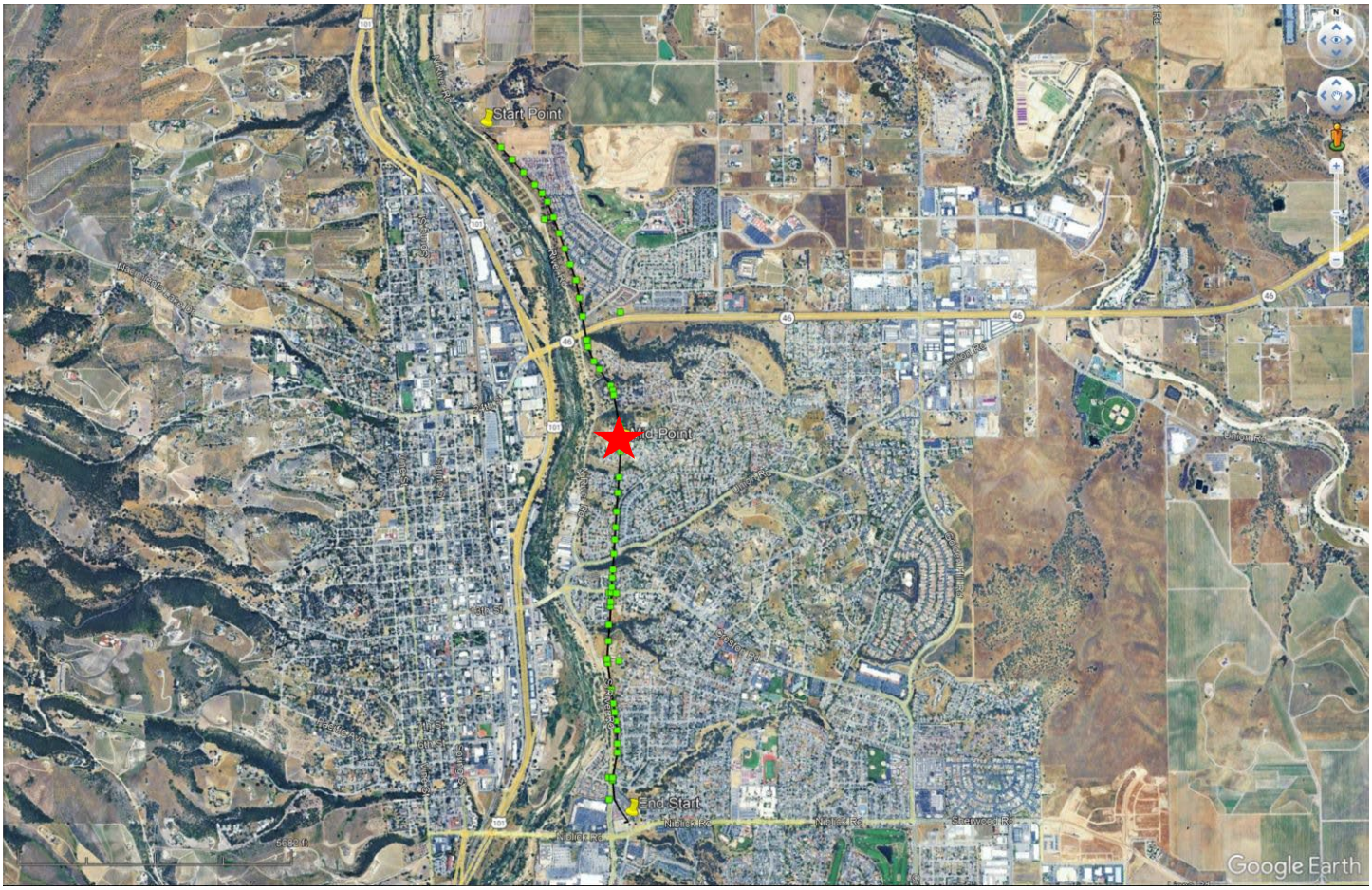


Flood Plain or Flood Prone Area Map

Source: FEMA NFHL FIRMette; December 16, 2024



Google Earth Aerial View



Pacific Gas and Electric Company®

Risk Determination

General Information			
Project/Site Name:	Estrella Substation and Paso Robles Area Reinforcement Project	Segment Name:	Reconductoring Segment (Phase 2)
Assessment Date:	January 17, 2025	Revision Date:	
Completed By	Katy DeYoe, QSD/P	Revised By:	
Original Segment Start Date:	6/01/2026	Original Segment End Date:	12/29/2027
Revised Start Date:		Revised End Date:	
Start Latitude:	35.655623	Start Longitude:	-120.689325
End Latitude:	35.696253	End Longitude:	-120.680645

Sediment Risk	
R-Factor:	44.45
K-Factor:	0.24
LS-Factor:	0.9
RxKxLS:	9.6012
Sediment Risk:	**Low**

RxKxLS	
<15	Low
15-75	Medium
>75	High

Receiving Water Risk			
Receiving Water Risk:	**High**	Project is not in a Sediment Sensitive Watershed.	Low
		In a Sediment Sensitive Watershed but not in the flood plain or flood prone area.	Medium
		In the flood plain or flood prone area of a Sediment Sensitive Watershed.	High

Combined Risk					
Project Type:	**2**		Low	Med	High
		Low	1	1	2
		Med	1	2	3
		High	2	3	3

Sediment Risk Calculation

R-Factor Documentation

Year	2025	2026	2027	Total
R-Factor	N/A	9.99	34.47	**44.46**

Source: US EPA Rainfall Erosivity Factor Calculator; January 17, 2025

Facility Information

Start Date: 06/01/2026	**Latitude:** 35.6756
End Date: 12/31/2026	**Longitude:** -120.6836

Calculation Results

Rainfall erosivity factor (R Factor) = 9.99

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2027	**Latitude:** 35.6756
End Date: 12/29/2027	**Longitude:** -120.6836

Calculation Results

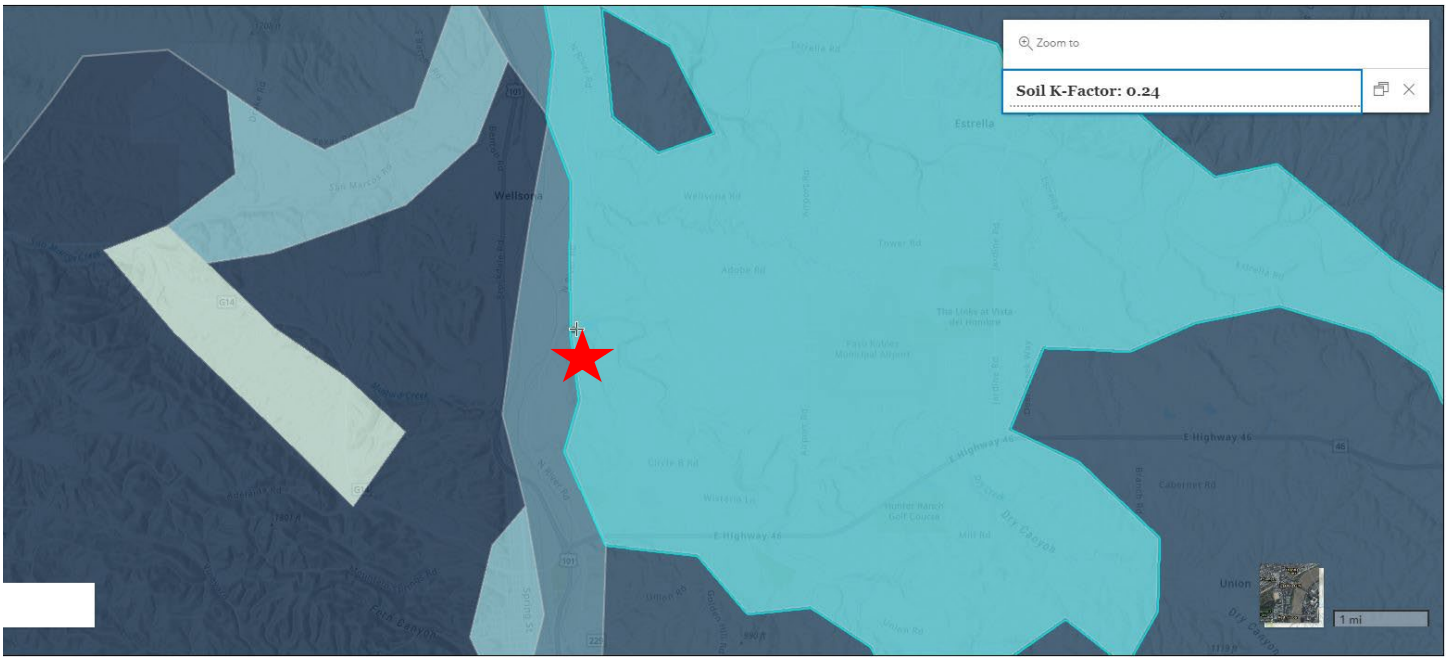
Rainfall erosivity factor (R Factor) = 34.47

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

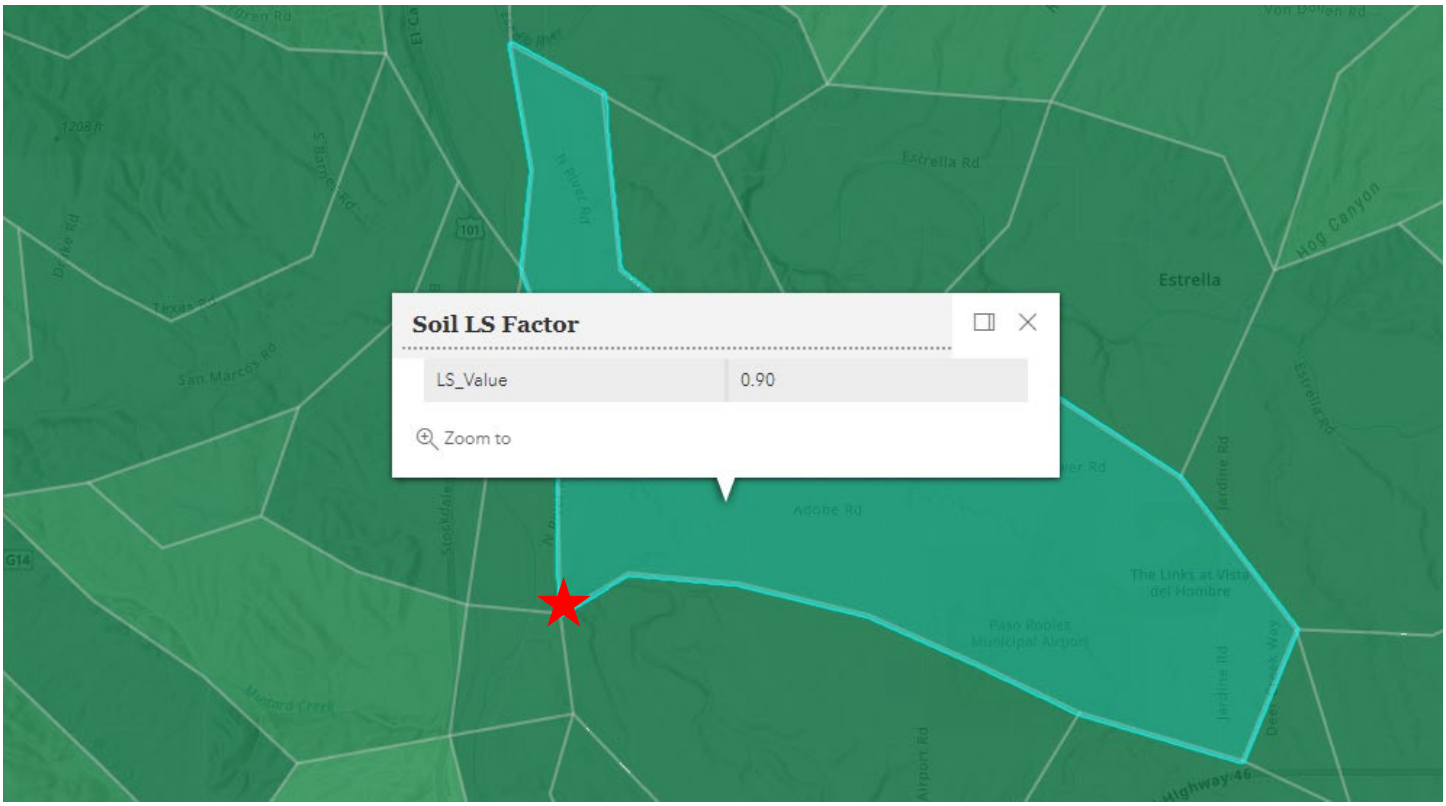
K-Factor Documentation

Source: Caltrans Water Quality Planning Tool; December 16, 2024



LS-Factor Documentation

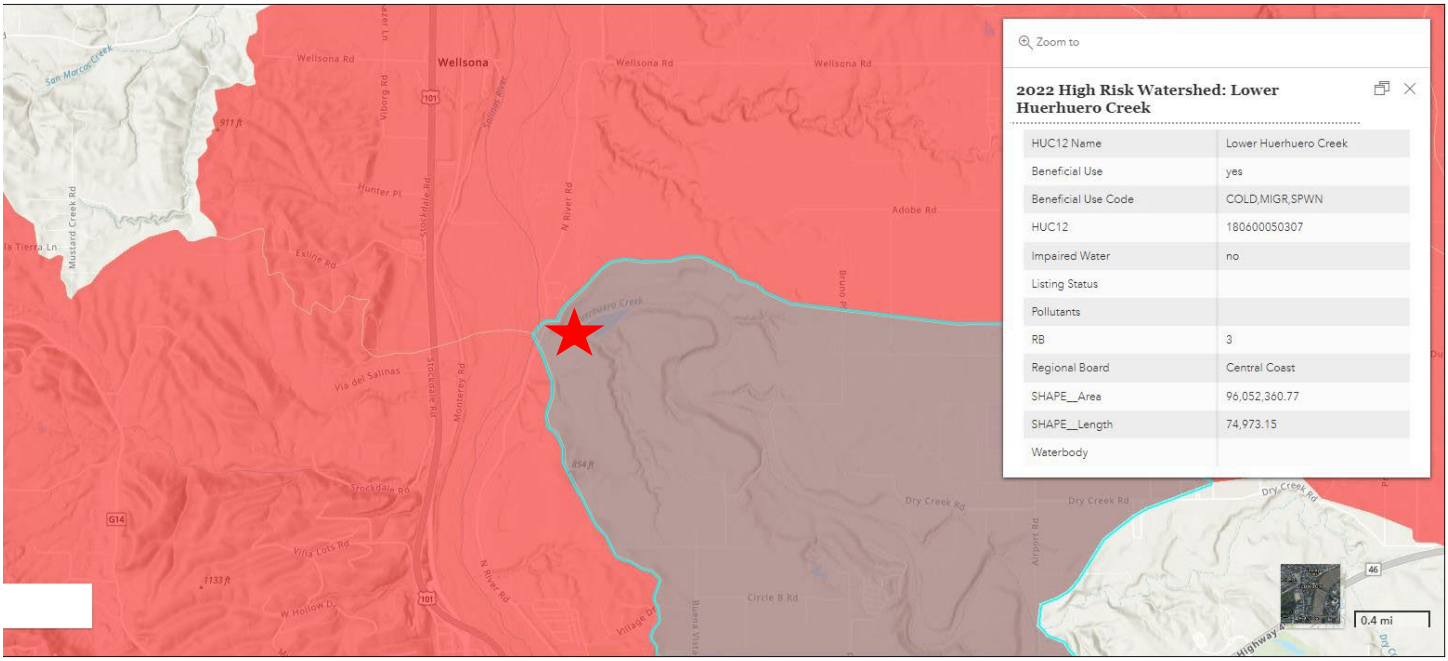
Source: Caltrans Water Quality Planning Tool; January 17, 2025



Receiving Water Risk Documentation

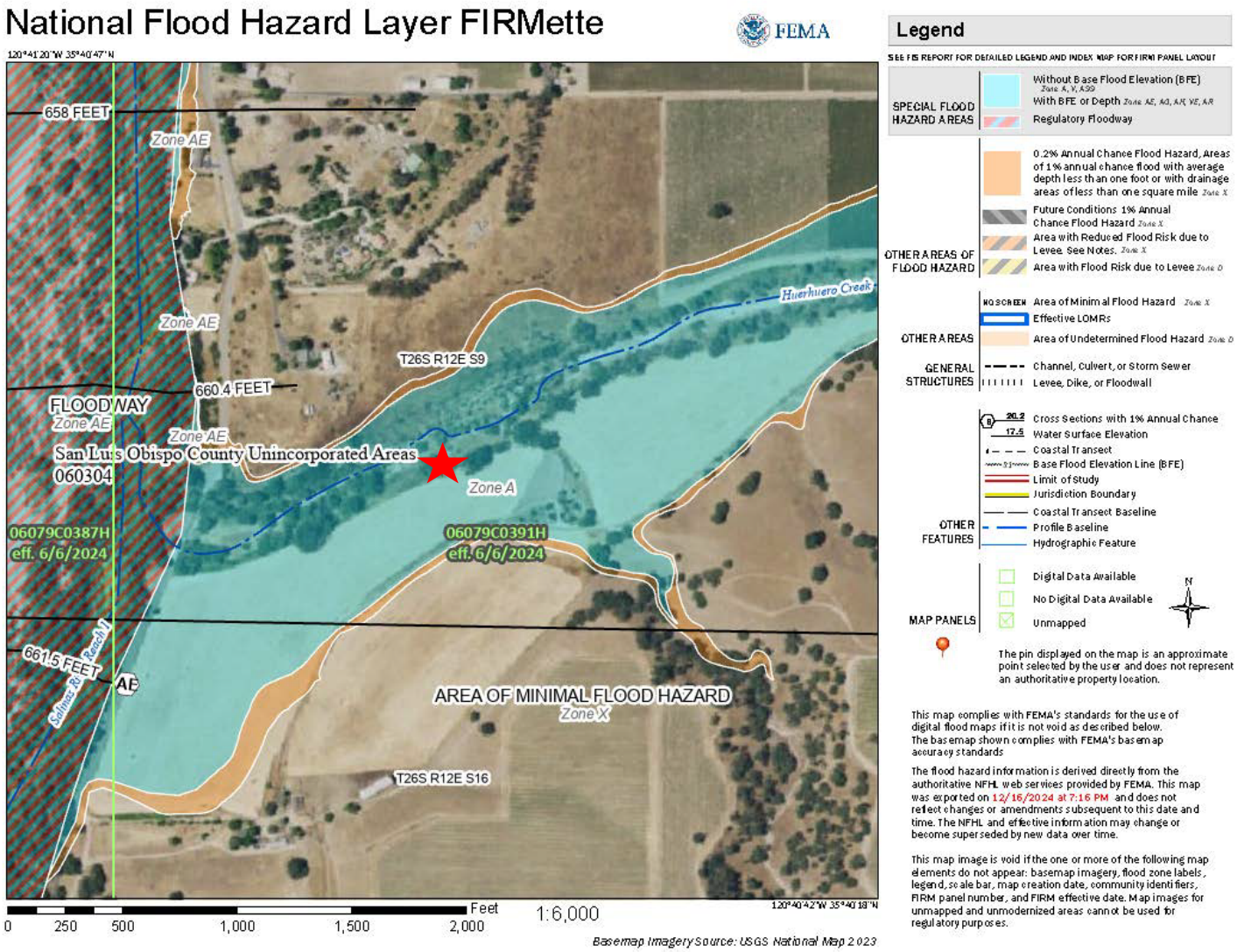
Sediment Sensitive Receiving Water Map

Source: Caltrans Water Quality Planning Tool; December 16, 2024



Flood Plain or Flood Prone Area Map

Source: FEMA NFHL FIRMette; December 16, 2024



Google Earth Aerial View



Pacific Gas and Electric Company®

Risk Determination

General Information			
Project/Site Name:	Estrella Substation and Paso Robles Area Reinforcement Project	Segment Name:	230 kV Transmission Interconnection
Assessment Date:	January 17, 2025	Revision Date:	
Completed By	Katy DeYoe, QSD/P	Revised By:	
Original Segment Start Date:	10/29/2026	Original Segment End Date:	05/26/2028
Revised Start Date:		Revised End Date:	
Start Latitude:	35.638185 (Northeast Location)	Start Longitude:	-120.599050 (Northeast Location)
End Latitude:	35.637121	End Longitude:	-120.600652 (Southwest Location)

Sediment Risk

R-Factor:	68.2
K-Factor:	0.24
LS-Factor:	1.46
RxKxLS:	23.89728
Sediment Risk:	**Medium**

RxKxLS	
<15	Low
15-75	Medium
>75	High

Receiving Water Risk

Receiving Water Risk:	**Medium**

Project is not in a Sediment Sensitive Watershed.	Low
In a Sediment Sensitive Watershed but not in the flood plain or flood prone area.	Medium
In the flood plain or flood prone area of a Sediment Sensitive Watershed.	High

Combined Risk

Project Type:	**2**

	Low	Med	High
Low	1	1	2
Med	1	2	3
High	2	3	3

Sediment Risk Calculation

R-Factor Documentation

Year	2026	2027	2028	Total
R-Factor	8.15	34.93	25.12	**68.2**

Source: US EPA Rainfall Erosivity Factor Calculator; January 17, 2025

Facility Information

Start Date: 10/29/2026	**Latitude:** 35.6378
End Date: 12/31/2026	**Longitude:** -120.5999

Calculation Results

Rainfall erosivity factor (R Factor) = 8.15

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2027	**Latitude:** 35.6378
End Date: 12/31/2027	**Longitude:** -120.5999

Calculation Results

Rainfall erosivity factor (R Factor) = 34.93

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2028	**Latitude:** 35.6378
End Date: 05/26/2028	**Longitude:** -120.5999

Calculation Results

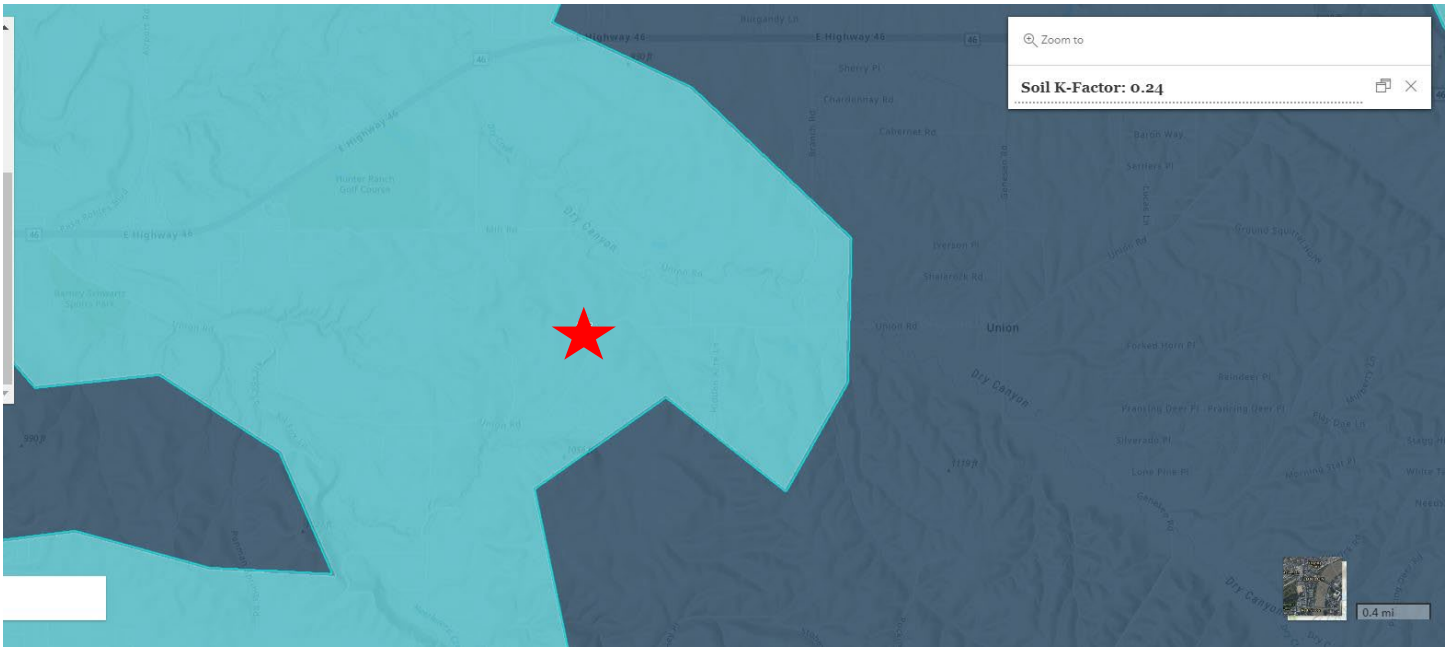
Rainfall erosivity factor (R Factor) = **25.12**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

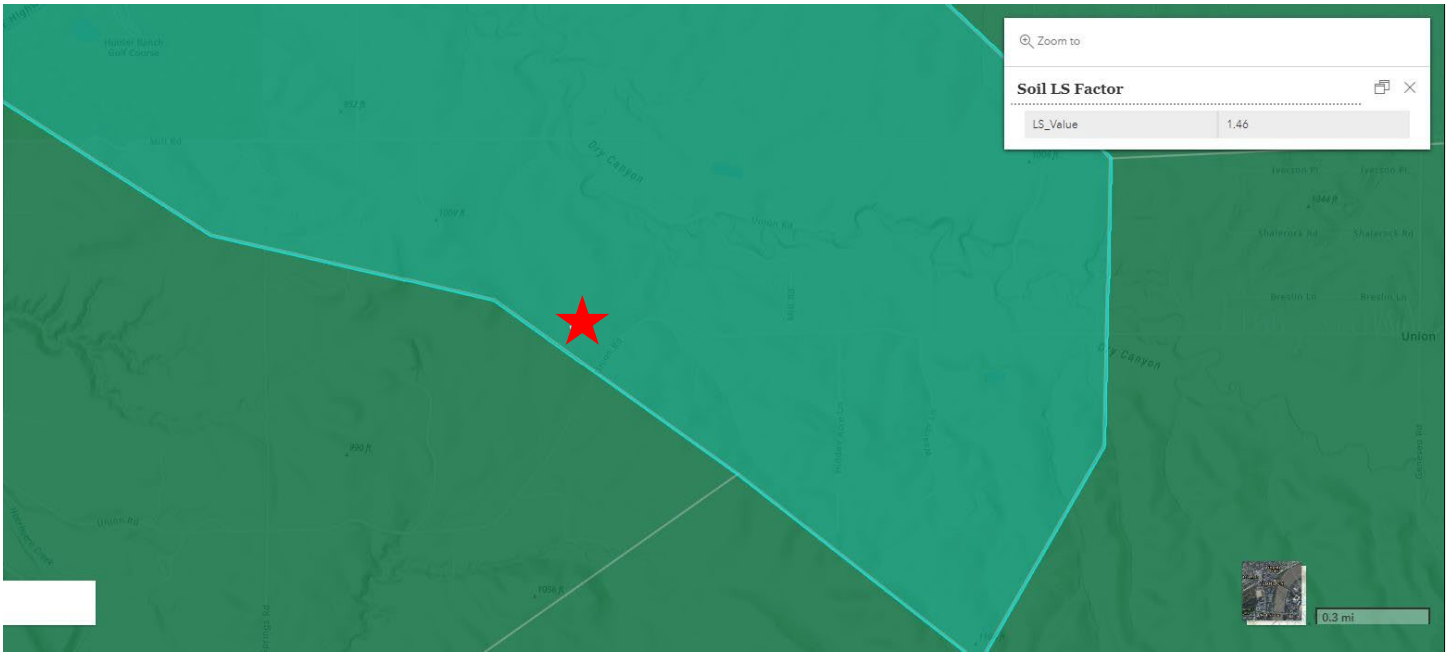
K-Factor Documentation

Source: Caltrans Water Quality Planning Tool; December 16, 2024



LS-Factor Documentation

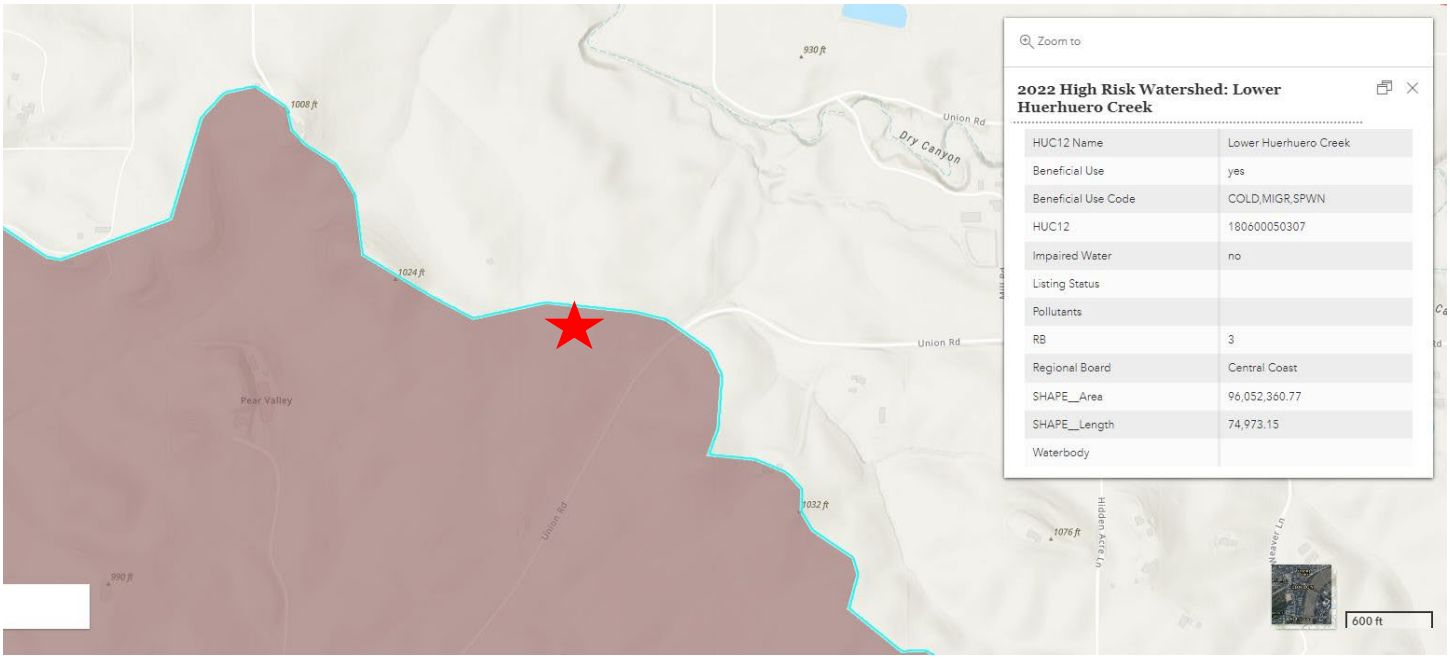
Source: Caltrans Water Quality Planning Tool; December 16, 2024



Receiving Water Risk Documentation

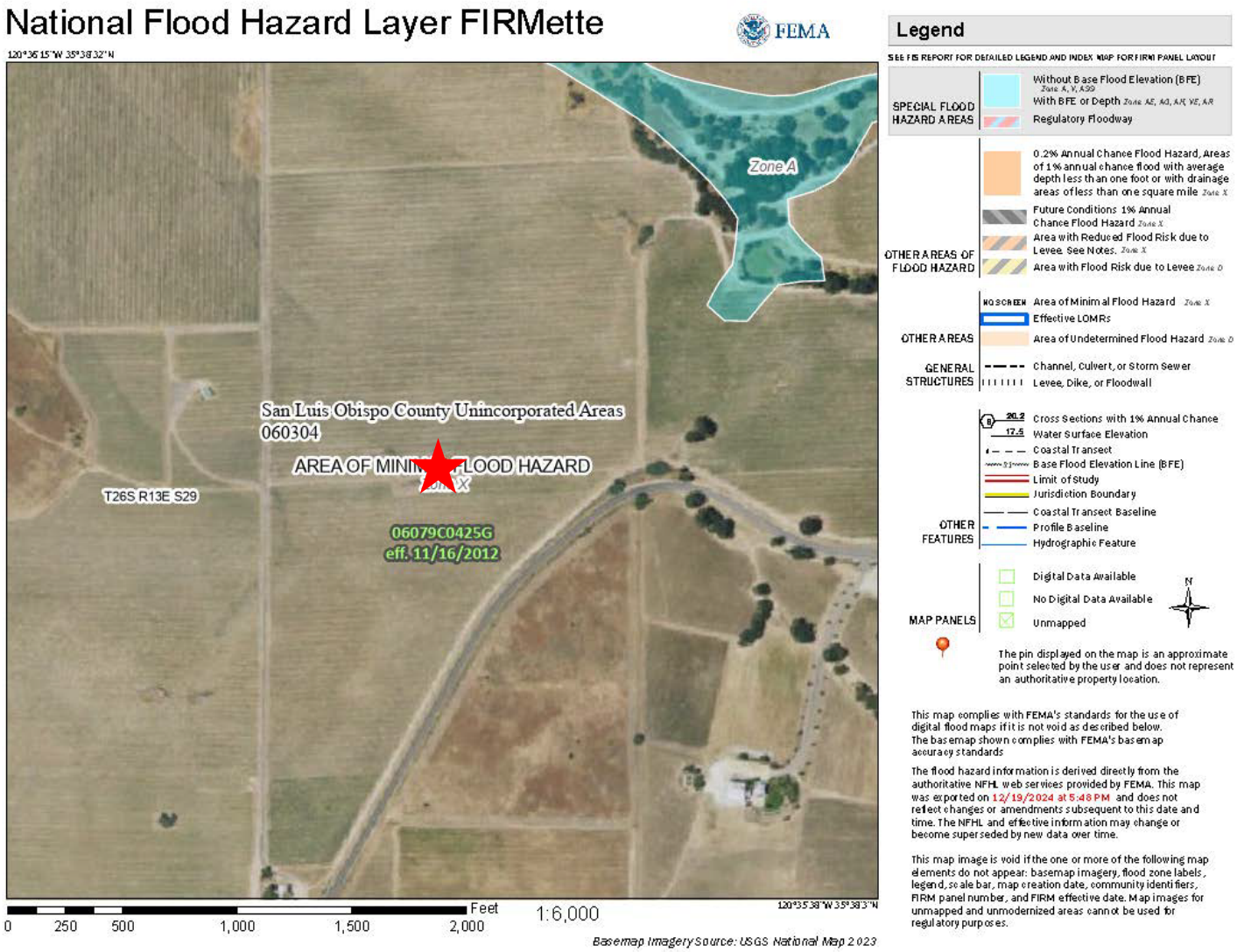
Sediment Sensitive Receiving Water Map

Source: Caltrans Water Quality Planning Tool; December 16, 2024



Flood Plain or Flood Prone Area Map

Source: FEMA NFHL FIRMette; December 16, 2024



Google Earth Aerial View



Pacific Gas and Electric Company®

Risk Determination

General Information			
Project/Site Name:	Estrella Substation and Paso Robles Area Reinforcement Project	Segment Name:	New 70 kV Power Line
Assessment Date:	January 17, 2025	Revision Date:	
Completed By	Katy DeYoe, QSD/P	Revised By:	
Original Segment Start Date:	8/16/2027	Original Segment End Date:	05/30/2029
Revised Start Date:		Revised End Date:	
Start Latitude:	35.635736 (substation)	Start Longitude:	-120.601233 (substation)
End Latitude:	35.695693 (western extent)	End Longitude:	-120.680743 (western extent)

Sediment Risk

R-Factor:	69.69
K-Factor:	0.24
LS-Factor:	2.03
RxKxLS:	33.952968
Sediment Risk:	**Medium**

RxKxLS	
<15	Low
15-75	Medium
>75	High

Receiving Water Risk

Receiving Water Risk:	**Medium**

Project is not in a Sediment Sensitive Watershed.	Low
In a Sediment Sensitive Watershed but not in the flood plain or flood prone area.	Medium
In the flood plain or flood prone area of a Sediment Sensitive Watershed.	High

Combined Risk

Project Type:	**2**

	Low	Med	High
Low	1	1	2
Med	1	2	3
High	2	3	3

Sediment Risk Calculation

R-Factor Documentation

Year	2027	2028	2029	Total
R-Factor	9.83	34.93	24.93	**69.69**

Source: US EPA Rainfall Erosivity Factor Calculator; January 17, 2025

Facility Information

Start Date: 08/16/2027	**Latitude:** 35.6862
End Date: 12/31/2027	**Longitude:** -120.5968

Calculation Results

Rainfall erosivity factor (R Factor) = 9.83

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2028	**Latitude:** 35.6862
End Date: 12/31/2028	**Longitude:** -120.5968

Calculation Results

Rainfall erosivity factor (R Factor) = 34.93

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2029	**Latitude:** 35.6862
End Date: 05/30/2029	**Longitude:** -120.5968

Calculation Results

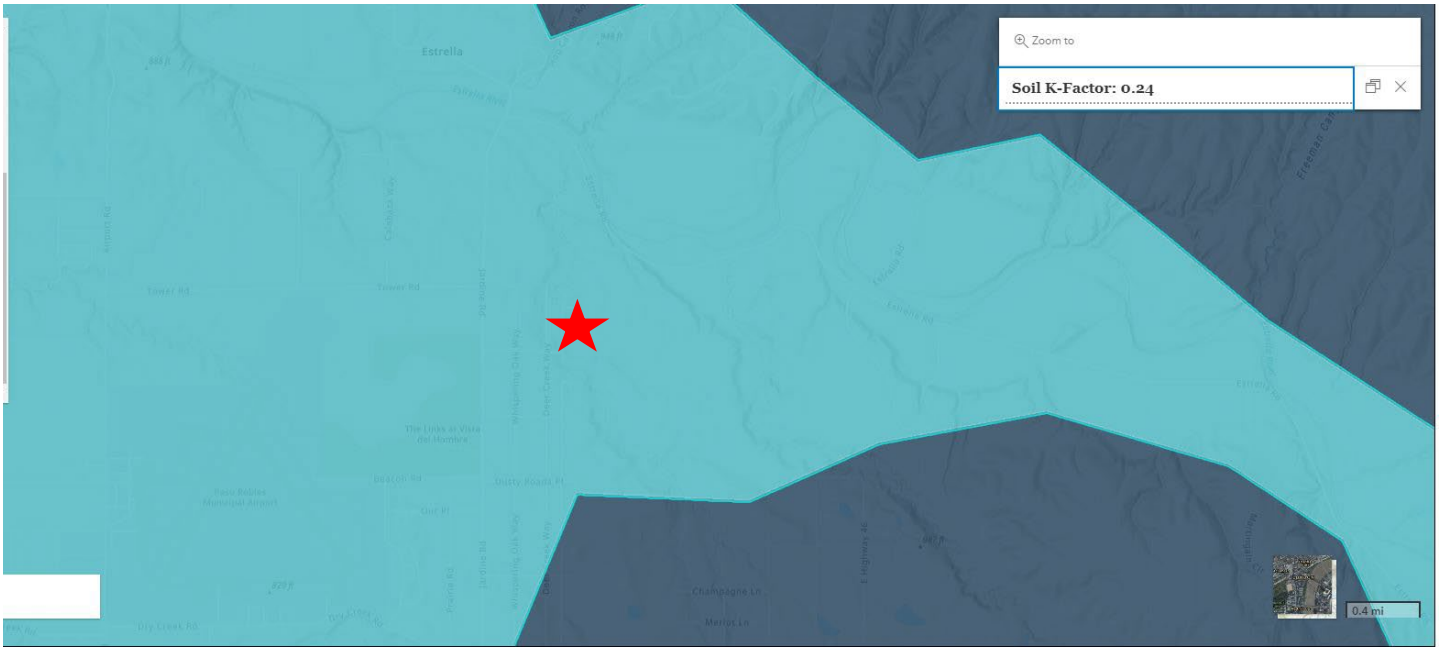
Rainfall erosivity factor (R Factor) = 24.93

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

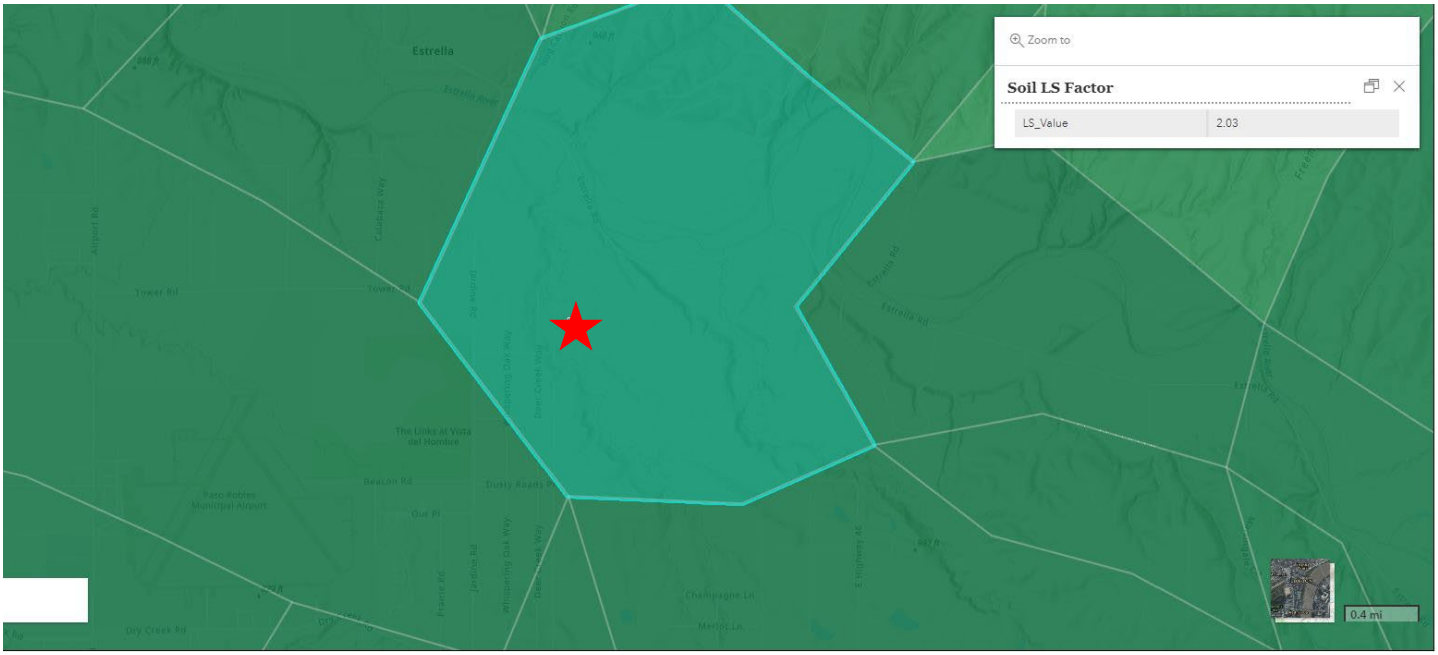
K-Factor Documentation

Source: Caltrans Water Quality Planning Tool; December 16, 2024



LS-Factor Documentation

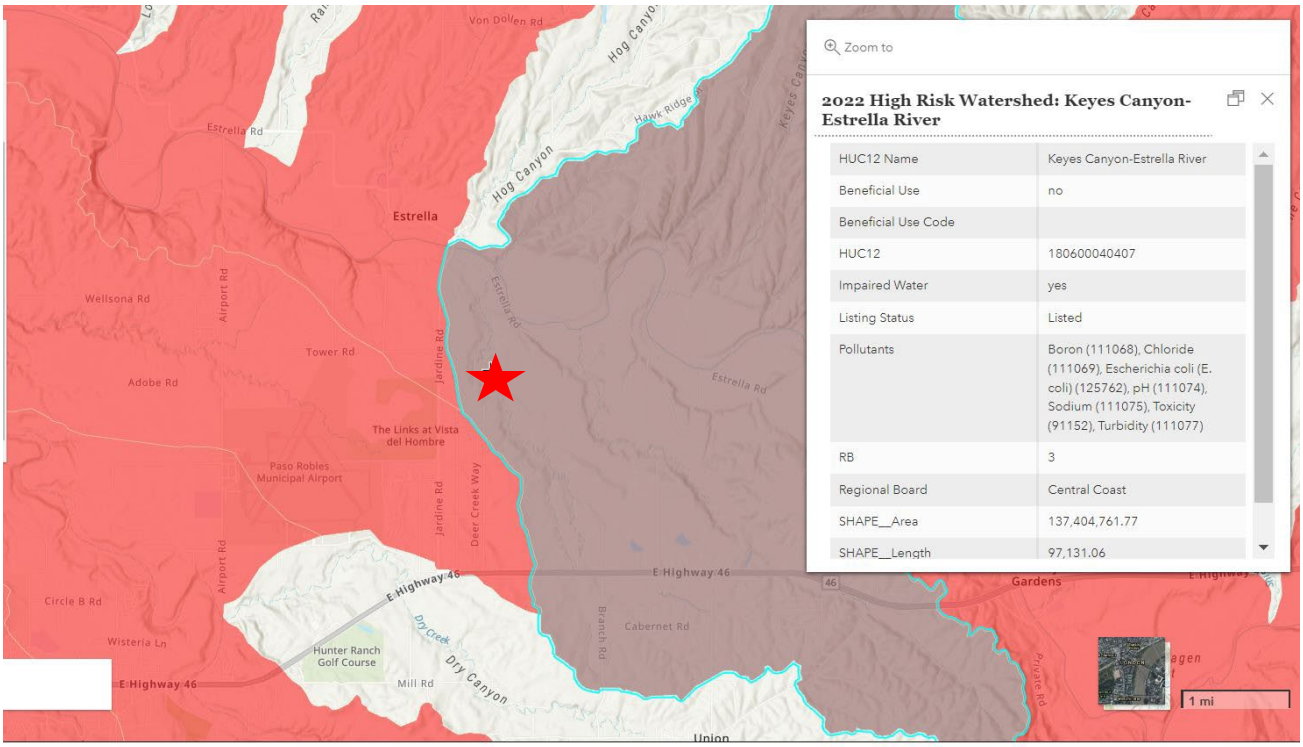
Source: Caltrans Water Quality Planning Tool; December 16, 2024



Receiving Water Risk Documentation

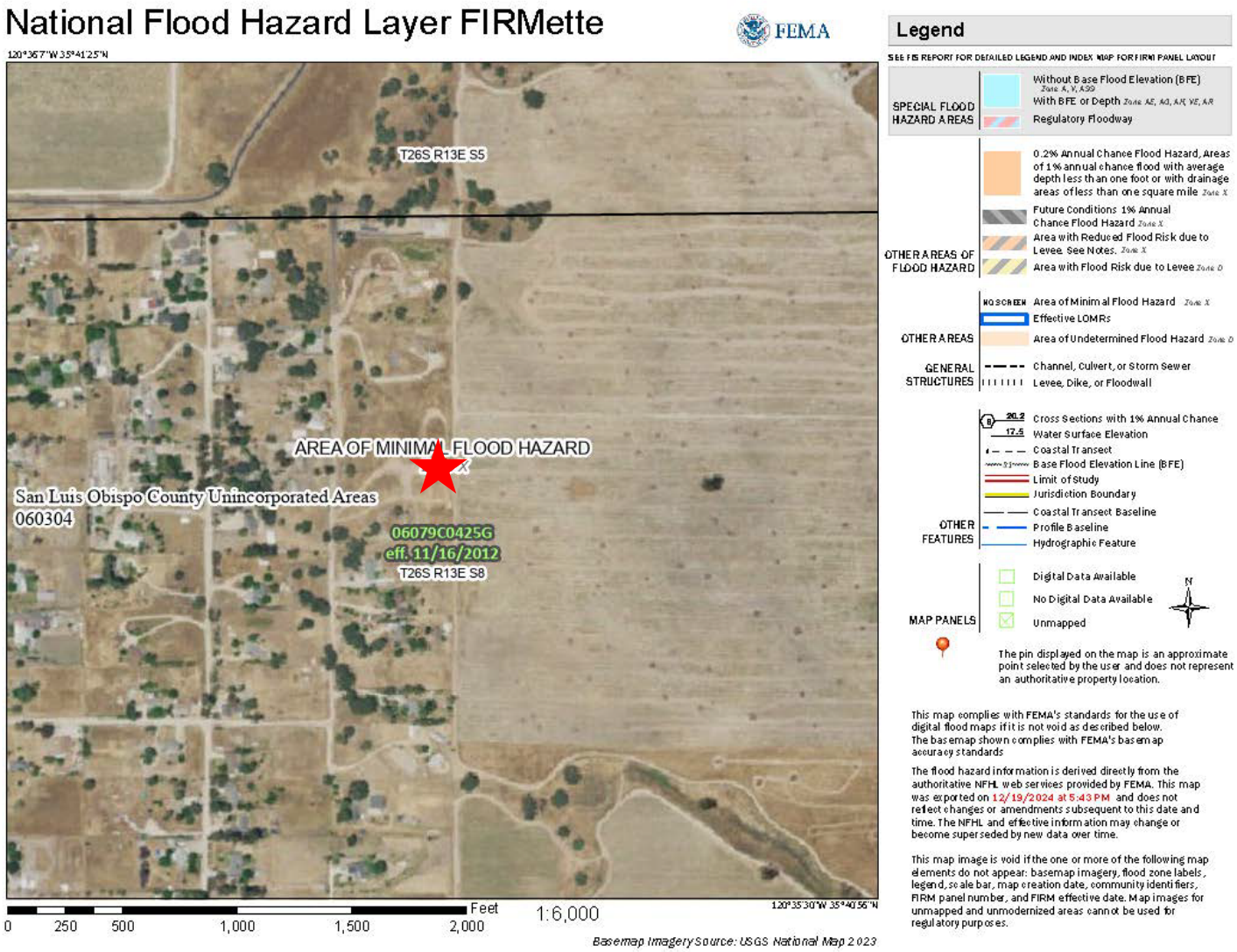
Sediment Sensitive Receiving Water Map

Source: Caltrans Water Quality Planning Tool; December 16, 2024

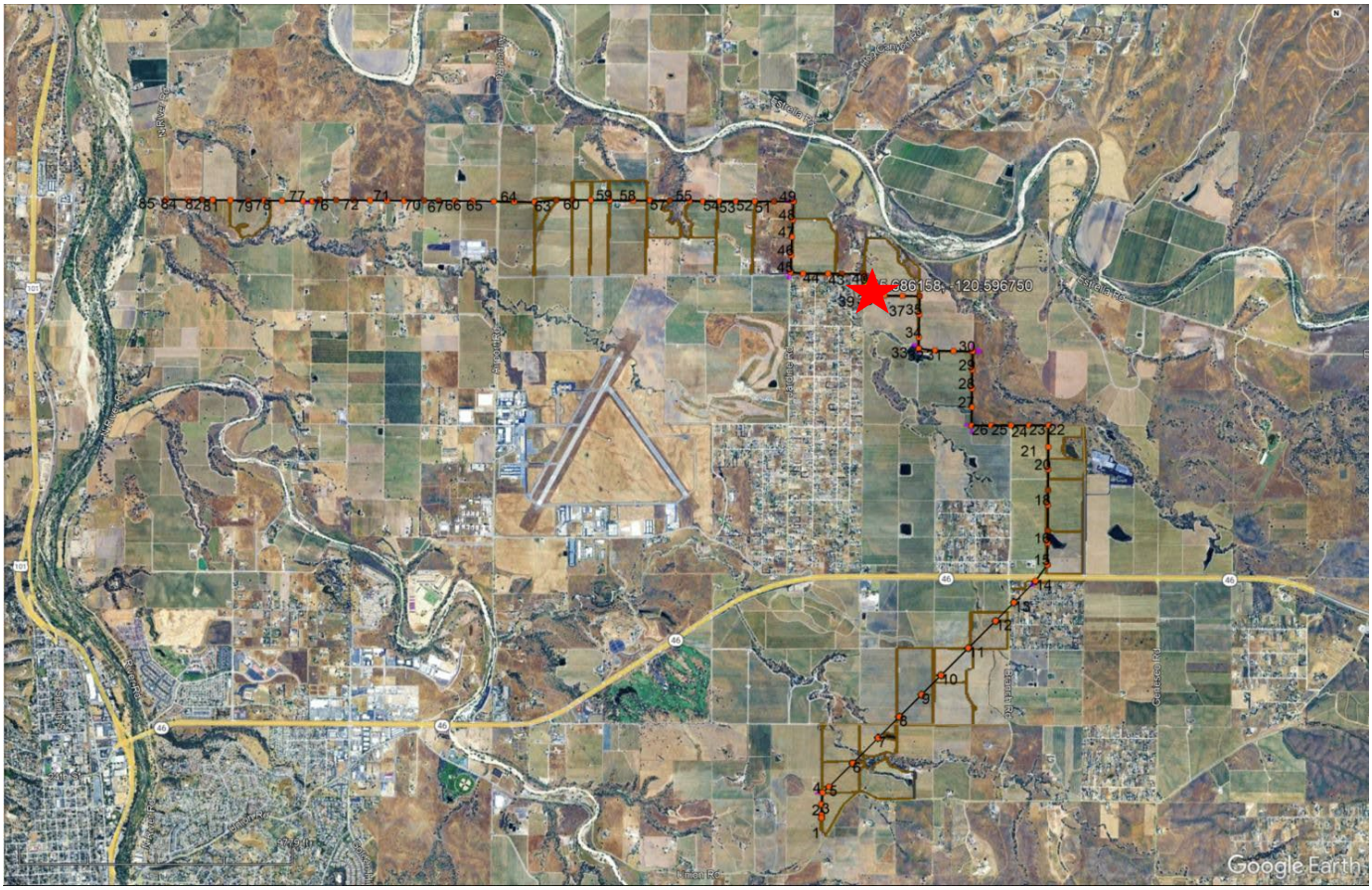


Flood Plain or Flood Prone Area Map

Source: FEMA NFHL FIRMette; December 16, 2024



Google Earth Aerial View



Pacific Gas and Electric Company®

Risk Determination

General Information			
Project/Site Name:	Estrella Substation and Paso Robles Area Reinforcement Project	Segment Name:	Ardmore Staging Area
Assessment Date:	January 30, 2025	Revision Date:	March 3, 2025
Completed By	Katy DeYoe, QSD/P	Revised By:	Katy DeYoe, QSD/P
Original Segment Start Date:	2/20/2025	Original Segment End Date:	5/30/2029
Revised Start Date:	8/4/2025	Revised End Date:	5/30/2029
Start Latitude:	35.638136	Start Longitude:	-120.653025
End Latitude:	N/A	End Longitude:	N/A

Sediment Risk	
R-Factor:	139.6
K-Factor:	0.24
LS-Factor:	1.92
RxKxLS:	64.32768
Sediment Risk:	**Medium**

RxKxLS	
<15	Low
15-75	Medium
>75	High

Receiving Water Risk			
Receiving Water Risk:	**Medium**	Project is not in a Sediment Sensitive Watershed.	Low
		In a Sediment Sensitive Watershed but not in the flood plain or flood prone area.	Medium
		In the flood plain or flood prone area of a Sediment Sensitive Watershed.	High

Combined Risk	
Project Type:	**2**

	Low	Med	High
Low	1	1	2
Med	1	2	3
High	2	3	3

Sediment Risk Calculation

R-Factor Documentation

Year	2025	2026	2027	2028	2029	Total
R-Factor	9.88	34.93	34.93	34.93	24.93	**139.6**

Source: US EPA Rainfall Erosivity Factor Calculator; March 3, 2025

Facility Information

Start Date: 08/04/2025	**Latitude:** 35.6381
End Date: 12/31/2025	**Longitude:** -120.6530

Calculation Results

Rainfall erosivity factor (R Factor) = 9.88

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2026	**Latitude:** 35.6381
End Date: 12/31/2026	**Longitude:** -120.6530

Calculation Results

Rainfall erosivity factor (R Factor) = 34.93

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2027	**Latitude:** 35.6381
End Date: 12/31/2027	**Longitude:** -120.6530

Calculation Results

Rainfall erosivity factor (R Factor) = **34.93**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2028	**Latitude:** 35.6381
End Date: 12/31/2028	**Longitude:** -120.6530

Calculation Results

Rainfall erosivity factor (R Factor) = **34.93**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

Facility Information

Start Date: 01/01/2029	**Latitude:** 35.6381
End Date: 05/30/2029	**Longitude:** -120.6530

Calculation Results

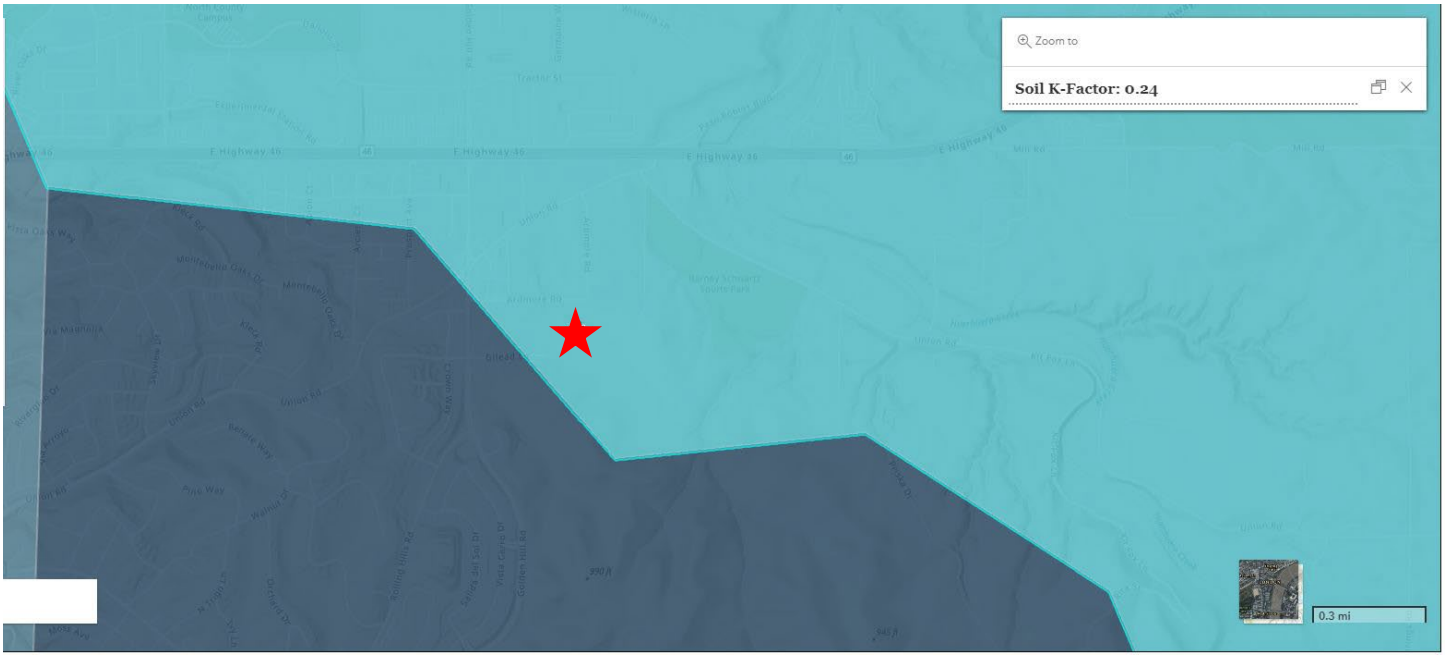
Rainfall erosivity factor (R Factor) = 24.93

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority (pdf), you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

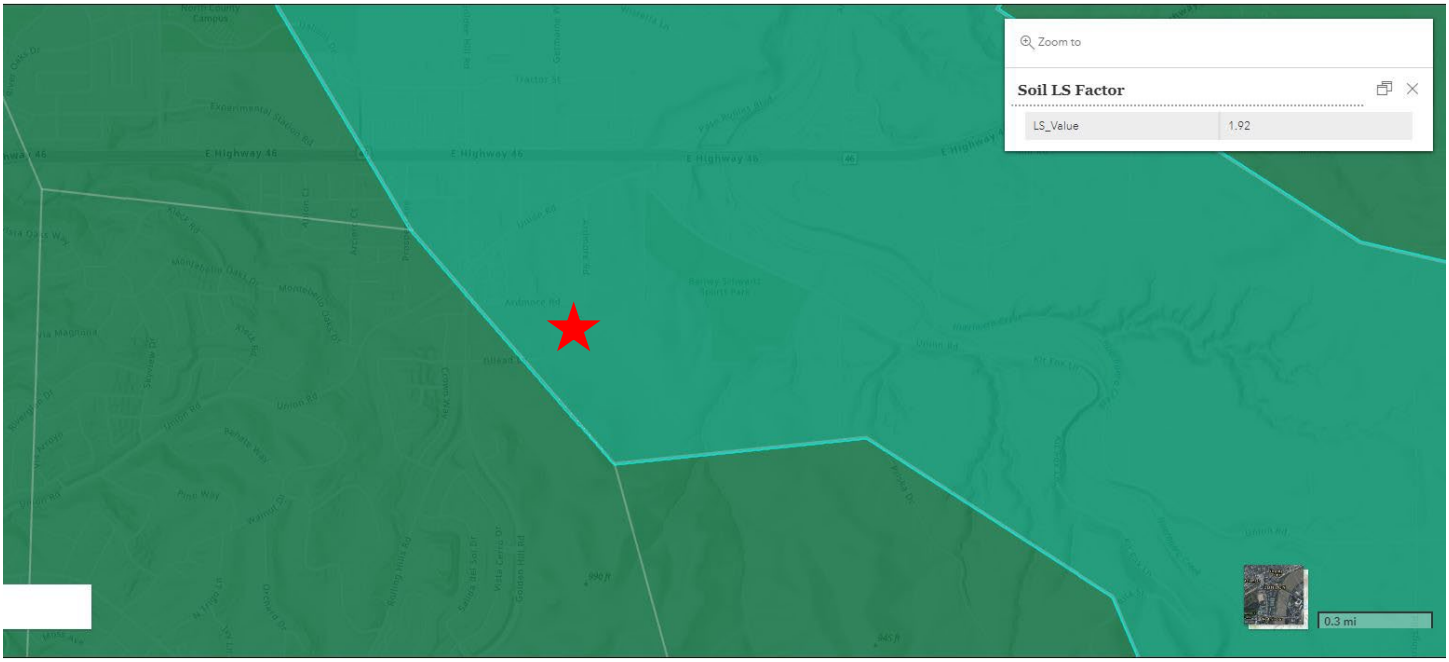
K-Factor Documentation

Source: Caltrans Water Quality Planning Tool; December 19, 2024



LS-Factor Documentation

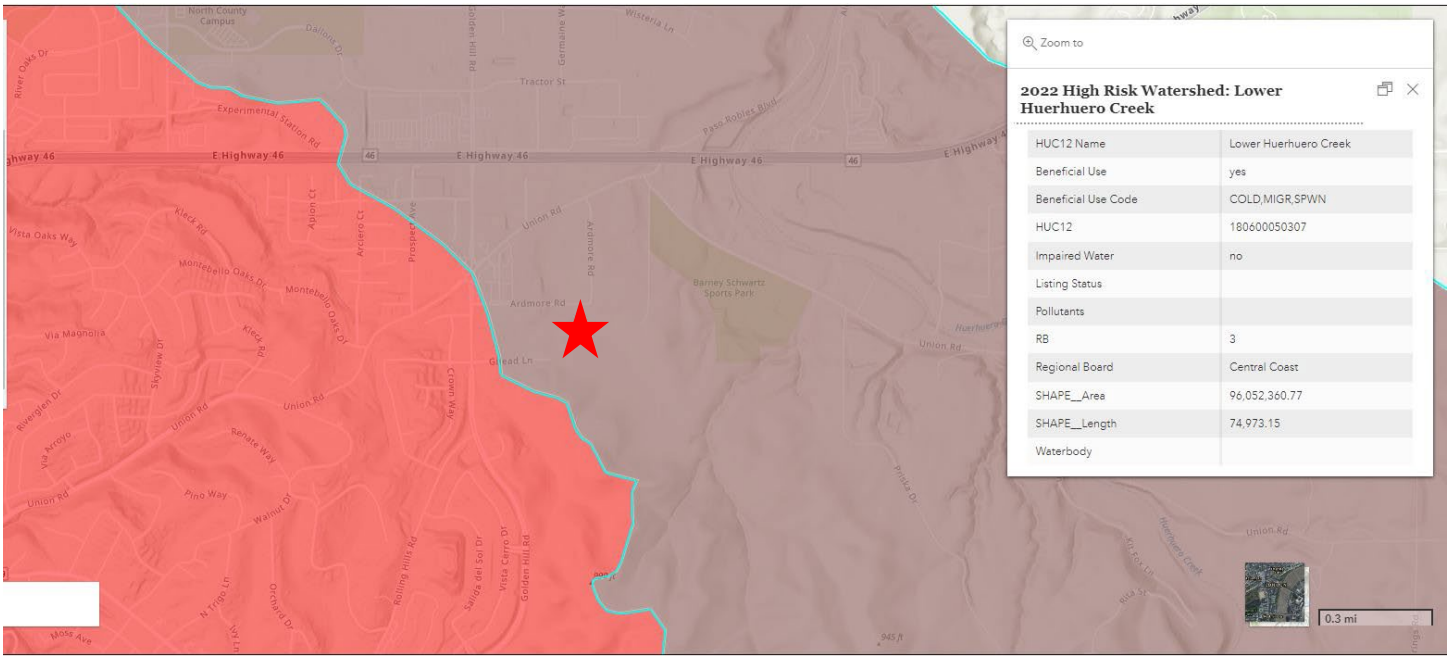
Source: Caltrans Water Quality Planning Tool; December 19, 2024



Receiving Water Risk Documentation

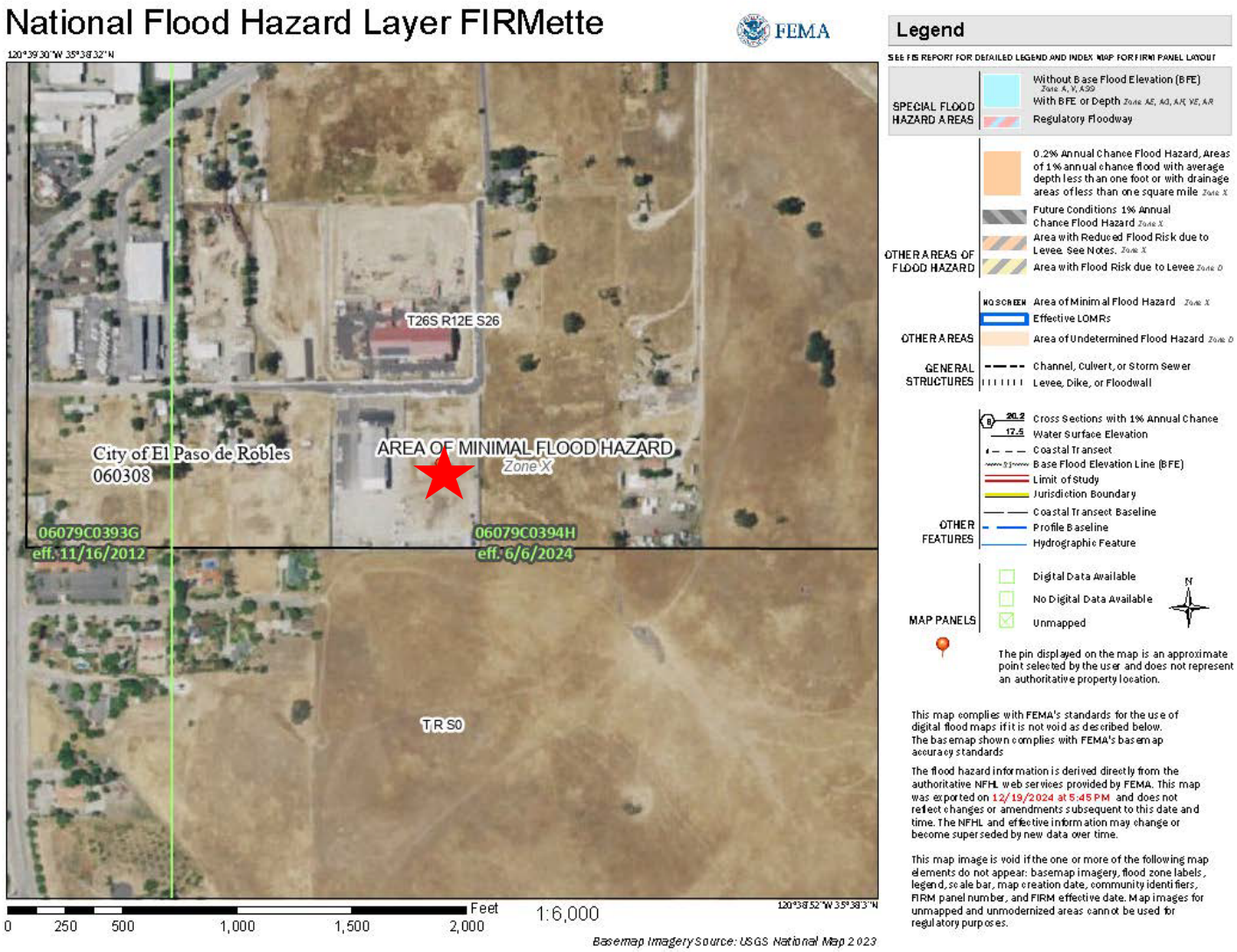
Sediment Sensitive Receiving Water Map

Source: Caltrans Water Quality Planning Tool; December 19, 2024



Flood Plain or Flood Prone Area Map

Source: FEMA NFHL FIRMette; December 19, 2024



Google Earth Aerial View



Pacific Gas and Electric Company

Environmental Management & Programs
300 Lakeside Drive
Oakland, CA 94612

March 7, 2025

California Regional Water Quality Control Board
Central Coast Region 3
895 Aerovista Place, Suite 101
San Luis Obispo, 93401

Subject: Notice of Change of Information 01 for Estrella Substation and Paso Robles Area Reinforcement - Staging Area Project, LUP Type 2 (WDID NO. 3 40C406178)

Dear Sir or Madam:

Pacific Gas and Electric Company (PG&E) is submitting a Change of Information (COI) ID 110376 for the Estrella Substation and Paso Robles Area Reinforcement - Staging Area Project (WDID 3 40C406178), which obtained coverage under the Construction General Permit (Order 2022-0057-DWQ) by:

- Moving the construction start date for the project as construction has been delayed due to delays in Notice to Proceed approval from the California Public Utilities Commission. All supporting documentation, including photographs showing construction has not begun has been provided.

This Change of Information (COI ID 110376) under the Construction General Permit has been filed in SMARTS, certifying that PG&E has met the conditions for revising the schedule and all changes to the SWPPP have been highlighted.

If you have any questions regarding this matter, please do not hesitate to contact us at stormwater@pge.com at your convenience.

Sincerely,

Construction Stormwater Team
Pacific Gas and Electric Company

Pacific Gas and Electric Company

Environmental Management & Programs
300 Lakeside Drive
Oakland, CA 94612

March 7, 2025

California Regional Water Quality Control Board
Central Coast Region 3
895 Aerovista Place, Suite 101
San Luis Obispo, 93401

Subject: Notice of Change of Information 01 for Estrella Substation and Paso Robles Area Reinforcement Project, LUP Type 2 (WDID NO. 3 40C406191)

Dear Sir or Madam:

Pacific Gas and Electric Company (PG&E) is submitting a Change of Information (COI) ID 110373 for the Estrella Substation and Paso Robles Area Reinforcement Project (WDID 3 40C406191), which obtained coverage under the Construction General Permit (Order 2022-0057-DWQ) by:

- Moving the construction start date for the project as construction has been delayed due to delays in Notice to Proceed approval from the California Public Utilities Commission. All supporting documentation, including photographs showing construction has not begun has been provided.

This Change of Information (COI ID 110373) under the Construction General Permit has been filed in SMARTS, certifying that PG&E has met the conditions for revising the schedule and all changes to the SWPPP have been highlighted.

If you have any questions regarding this matter, please do not hesitate to contact us at stormwater@pge.com at your convenience.

Sincerely,

Construction Stormwater Team
Pacific Gas and Electric Company

Appendix C

Soil Disturbance Calculation



Pacific Gas and Electric Company®

Appendix D

Potential Pollutant Information

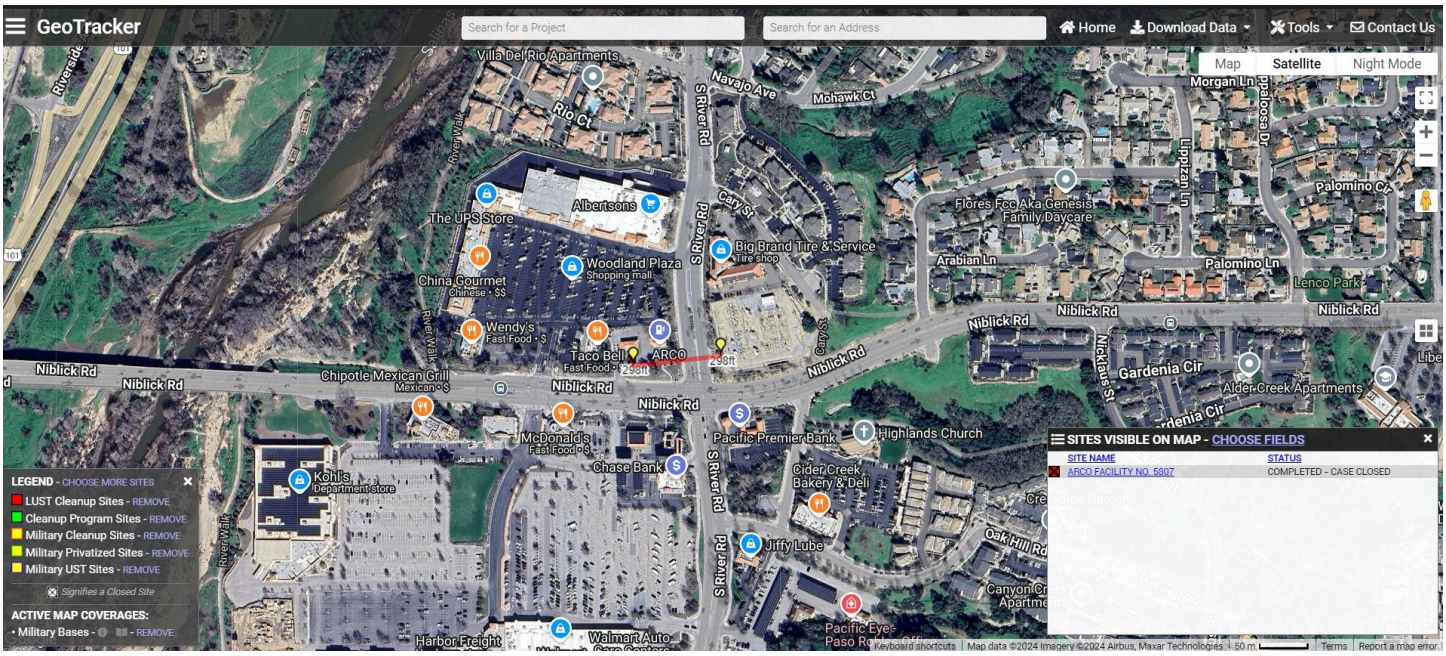
GeoTracker Information
Pollutant Source Assessment

Pacific Gas and Electric Company®

Pacific Gas and Electric Company®

GeoTracker Information

Source: https://geotracker.waterboards.ca.gov/



GeoTracker research for the reconductoring line (Phase 1) was used to identify and include any potential pollutants associated with past contamination. GeoTracker research was conducted on December 9, 2024 and there is 1 Leaking Underground Storage Tank (LUST) cleanup site approximately 300 feet west of the boundary of the Paso Robles Substation (State Water Board 2024).

GeoTracker research for the remaining 5 project areas will be conducted closer to construction commencement.

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Pollutant Source Assessment

Activity	Associated Material or Pollutant	Visually Observable?	Pollutant Indicators	Suggested Field Analyses	Suggested Lab Analyses	Method Detection Limits[1]
Building Construction						
	Drywall	Yes	Copper, aluminum, general minerals	pH or Turbidity Meter	EPA 200.8 (Metals)	(Aluminum) 0.0016 mg/L
	Particle Board	No	Formaldehyde	Test Kit	EPA 8315	
	Untreated Wood	No	BOD	Nitrate	EPA 405.1	
	Heating, Ventilation, Air Conditioning	Yes	Freon	Visually Observable – No Testing Required		
	Insulation	No	Aluminum, zinc	None	EPA 200.8	(Aluminum) 0.0016 mg/L (Zinc) 0.00027 mg/L
	Plumbing – Solder, Flux, Pipe Fitting	No	Copper, lead, zinc, tin	None	EPA 200.8	(Lead) 0.000052 mg/L (Zinc) 0.00027 mg/L
	Roofing	No	Copper, lead, VOC	None	EPA 200.8 (Metals) EPA 601/602 or EP 624 (VOC)	(Lead) 0.000052 mg/L
Cleaning						
	Acid	No	pH, acidity, anions	pH Meter	EPA 150.1 (pH) SM 2310B (acidity) EPA 300.0 (anions)	
	Bleach	No	Residual Chlorine	Chlorine	SM 4500-CL G	
	Detergent	Yes	Foam, MBAS	Visually Observable – No Testing Required		
	TSP	No	Phosphate	Phosphate	EPA 365.3	
	Solvents	No	VOC SVOC	None	EPA 601/602 or EP 624 (VOC) EPA 625 (SVOC)	
Concrete Demolition, Paving, Masonry, Flatwork, Structures, and Any Other Concrete Work						
	Masonry products	No	pH, alkalinity	pH Meter	EPA 150.1 (pH)	

Activity	Associated Material or Pollutant	Visually Observable?	Pollutant Indicators	Suggested Field Analyses	Suggested Lab Analyses	Method Detection Limits[1]
					SM 2320 (Alkalinity)	
	Sealant (Methyl Methacrylate)	No	MMA, cobalt, zinc, SVOC	None	EPA 625 (SVOC) EPA 200.8 (Metals)	(Zinc) 0.00027 mg/L
	Bottom Ash, Steel Slag, Foundry Sand, Fly Ash, Municipal Solid Waste	No	pH, aluminum, calcium, vanadium, zinc	Calcium Test	EPA 200.8 (Metals) EPA 200.7 (Calcium)	(Aluminum) 0.0016 mg/L (Zinc) 0.00027 mg/L
	Mortar	Yes	Milky liquid	Visually Observable – No Testing Required		
	Concrete Rinse Water	Yes	Milky liquid	Visually Observable – No Testing Required		
	Non-pigmented Curing Compounds	No	Acidity, alkalinity, pH, VOC, SVOC	pH Meter	SM 2310B (Acidity) SM 2320 (Alkalinity) EPA 150.1 (pH) EPA 601/602 or EPA 624 (VOC) EPA 625 (SVOC)	
Contaminated Soil Removal/Remediation						
	Aerially Deposited Lead	No	Lead	None	EPA 200.8	(Lead) 0.000052 mg/L
	Petroleum	Yes	Rainbow surface sheen and odor	Visually Observable – No Testing Required		
Dust Suppression						
	Palliative Salts (Magnesium Chloride, Calcium Chloride, Natural Brines)	No	Chloride, TDS, Cations	Chloride, TDS	EPA 300.0 (Chloride) EPA 160.1 (TDS) EPA 200.7 (Cations)	
Landscaping						

Activity	Associated Material or Pollutant	Visually Observable?	Pollutant Indicators	Suggested Field Analyses	Suggested Lab Analyses	Method Detection Limits[1]
	Aluminum Sulfate	No	Aluminum, TDS, sulfate	TDS Meter Sulfate	EPA 200.8 (Metals) EPA 160.1 (TDS) EPA 300.0 (Sulfate)	(Aluminum) 0.0016 mg/L
	Sulfur-Elemental	No	Sulfate	Sulfate	EPA 300.0 Sulfate	
	Fertilizers	No	BOD, COD, DOC, Sulfate, TOC, nitrate, nitrogen, phosphate, potassium, ammonia	Nitrate	EPA 415.1 (TOC) EPA 300.0 (Nitrate) EPA 351.3 (TKN) EPA 410.4 (COD)	(Nitrate) 0.055 mg/L
	Natural Earth (sand, gravel, topsoil)	Yes	Cloudiness and turbidity	Visually Observable – No Testing Required		
	Herbicide	No	Herbicide	None	Contact lab for specific herbicide pesticide	
	Pesticide	No	Pesticide	None		
	Lime	No	pH, alkalinity	pH Meter	SM 2320 (Alkalinity) EPA 150.1 (pH)	
Material Bonding						
	Adhesives	No	COD, phenols, SVOC	Phenol	EA 410.4 (COD) EPA 420.1 (Phenol) EPA 625 (SVOC)	
Painting						
	Paint	Yes	Color, Cloudiness	Visually Observable – No Testing Required		
	Paint Stripper	No	VOC, SVOC, metals	None	EPA 601/602 or EPA 624 (VOC) EPA 625 (SVOC)	
	Resin	No	COD, SVOC	None	EPA 410.4 (COD) EPA 625 (SVOC)	
	Sealant	No	COD	None	EPA 410.4 (COD)	

Activity	Associated Material or Pollutant	Visually Observable?	Pollutant Indicators	Suggested Field Analyses	Suggested Lab Analyses	Method Detection Limits[1]
	Solvents	No	COD, VOC, SVOC	None	EPA 410.4 (COD) EPA 601/602 or EPA 624 (VOC) EPA 625 (SVOC)	
	Lacquers, Varnish, Enamels, Turpentine	No	COD, VOC, SVOC	None	EPA 410.4 (COD) EPA 601/602 or EPA 624 (VOC) EPA 625 (SVOC)	
	Thinner	No	VOC, COD	None	EPA 410.4 (COD) EPA 601/602 or EPA 624 (VOC)	
Paving and Pavement Demolition						
	Hot Asphalt	Yes	Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		
	Asphalt Emulsion	Yes	Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		
	Liquid Asphalt	Yes	Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		
	Cold Mix	Yes	Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		
	Crumb Rubber	Yes	Black, Solid Material	Visually Observable – No Testing Required		
	Asphalt Concrete (Any)	Yes	Rainbow Surface or Brown Suspension	Visually Observable – No Testing Required		
Pool and Fountain Construction						
Portable Restroom						
	Portable Toilet Waste	Yes No	Blue Liquid, odor Bacteria, viruses	None	SM 9222/3 EPA 1600	
Soil Disturbance (demolition, clearing, grubbing, grading, excavation, trenching)						
	Sediment	Yes	Turbidity	Visually Observable – No Testing Required		
Soil Stabilization and Amendments						

Activity	Associated Material or Pollutant	Visually Observable?	Pollutant Indicators	Suggested Field Analyses	Suggested Lab Analyses	Method Detection Limits[1]
	Polymer/Copolymer	No	Organic Nitrogen, BOD, COD, DOC, Nitrate, Sulfate, Nickel	Nitrate, Sulfate	EPA 351.3 (TKN) EPA 405.1 (BOD) EPA 410.4 (COD) EPA 415.1 (DOC) EPA 300.0 (Nitrate) EPA 300.0 (Sulfate) EPA 200.8 (Metal)	(Nickel) 0.00013 mg/L
	Straw Mulch	Yes	Solids	Visually Observable – No Testing Required		
	Lignin Sulfonate	No	Alkalinity, TDS	pH or TDS meter	SM 2320 (Alkalinity) EPA 160.1 (TDS)	
	Psyllium	No	COD, TOC	None	EPA 410.4 (COD) EPA 415.1 (TOC)	
	Guar/Plant Gums	No	COD, TOC, Nickel	None	EPA 410.4 (COD) EPA 415.1 (TOC) EPA 200.8 (Metal)	
	Gypsum	No	pH, calcium, sulfate, aluminum, barium, manganese, vanadium	pH meter, calcium, sulfate	EPA 150.1 (pH) EPA 200.7 (Calcium) EPA 300.0 (Sulfate) EPA 200.8 (Metals)	(Aluminum) 0.0016 mg/L
	Vegetation Stockpiles	No	BOD	Nitrate	EPA 405.1	
Use of Treated Wood Products						
	Ammonical-Copper-Zinc Arsenate (ACZA) Copper-Chromium-Arsenic (CCA)	No	Arsenic, chromium, copper, zinc	Chromium	EPA 200.8 (Metals)	(Arsenic) 0.00045 mg/L (Chromium) 0.00014 mg/L (Zinc) 0.00027 mg/L

Activity	Associated Material or Pollutant	Visually Observable?	Pollutant Indicators	Suggested Field Analyses	Suggested Lab Analyses	Method Detection Limits[1]
	Ammonical-Copper-Arsenate (ACA) Copper Naphthenate					
	Creosote	Yes	Rainbow surface or brown suspension	Visually Observable – No Testing Required		
Utility Construction, Flushing, or Breaks						
	Chlorinated Water	No	Total chlorine	Chlorine	SM 4500-CL G	
	Sewerline	No	Bacteria, viruses	No	SM 9222/3 EPA 1600	
Vehicle and Equipment Operation, Maintenance, and Repair						
	Antifreeze and Other Vehicle Fluids	Yes	Colored Liquid	Visually Observable – No Testing Required		
	Batteries	No	Sulfuric acid, lead, pH	pH Meter	EPA 300.0 (Sulfate) EPA 200.8 (Metal) EPA 150.1 (pH)	
	Fuels, Oils, Lubricants	Yes	Rainbow surface sheen and odor	Visually Observable – No Testing Required		

[1] Contact laboratory for Method Detection Limits based on analyte, test method, testing equipment, and characteristics.

Acronyms:

- BOD – Biochemical Oxygen Demand
- COD – Chemical Oxygen Demand
- DOC – Dissolved Organic Carbon
- EPA – Environmental Protection Agency
- HACH – Worldwide company that provides advanced analytical systems and technical support for water quality testing.
- SM – Standard Method
- SVOC – Semi-Volatile Organic Compounds
- TDS – Total Dissolved Solids
- TKN – Total Kjeldahl Nitrogen
- TOC – Total Organic Carbon
- TSP – Tri-Sodium Phosphate
- VOC - Volatile Organic Compounds

References:

- Construction Storm Water Sampling and Analysis Guidance Document, California Stormwater Quality Task Force, October 2001.
- Environmental Impact of Construction and Repair Materials on Surface and Ground Waters, Report 448, National Cooperative Highway Research Program, 2001
- Soil Stabilization for Temporary Slopes, Environmental Programs, California Department of Transportation, October 1, 1999.
- Statewide Storm Water Management Plan, Division of Environmental Analysis, California Department of Transportation, April 2002.
- Statewide Storm Water Quality Practice Guidelines, Environmental Program, California Department of Transportation, August 2000.
- Soil Stabilization for Temporary Slopes and District 7 Erosion Control Pilot Study, June 2000.
- Stormwater Monitoring Protocols, Guidance Manual, California Department of Transportation, May 2000.

Appendix E

Example Forms

Inspection Form
Rain Log
Sampling Log
Contractor Training Form
QSP Delegate Training Form
NAL Exceedance Report Form
Unauthorized Discharge Report Form
Chain of Custody Form

PG&E Pacific Gas and Electric Company®

Pacific Gas and Electric Company

Project Name:
Stormwater Inspection Form

Information	
Inspection Number	**Inspector**
Inspection Name	**Project Status**
Inspection Status	**Inspection Date/Time**
Construction Activities	**Stormwater Inspection Type**
SWPPP Status	**Is the SWPPP Onsite?**
WDID No.	**Area of Exposed Soil (acres)**

Precipitation	
Is this a Rain Event Inspection?	**Precipitation Observed?**
Estimated Storm Start	**Predicted Chance of Rain**
Estimated Days Since Last Storm	**Cumulative Rainfall for Event (in)**
Storm Duration (Days)	**Rain Gauge Type**

Sampling		
Were stormwater discharge samples collected?	**pH Results**	**Turbidity Results**
Were non-visible pollutant samples collected?		

Discharge	
Was discharge observed?	**What is the location of the discharge?**
Constituents Observed	

BMP Checklist	
Does it appear that adequate measures are implemented for:	
Housekeeping - Construction Materials	
Housekeeping - Waste Management	
Housekeeping - Landscape Materials	
Housekeeping - Vehicle Storage & Maintenance	
Housekeeping - Air Deposition	
Non-Storm Water Management	
Erosion Control	
Sediment Control	
Run-on and Runoff Control	
BMP Controls	
BMP Deficiencies	**SWPPP Training Provided?**
Are BMPs aligned with SWPPP?	**Are BMPs effective for current activities?**

Details	
Summary	**Concerns/Commitments**
Discharge Comments	

Inspection Photos & Files

Signature

Title	Date

Signature

Pacific Gas and Electric Company®

Rain Log

Construction Site Name:				
WDID #:				
Date (mm/dd/yy)	Time (24-hr)	Initials	Rainfall Depth (Inches)	Notes:

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Sampling Log

General Information			
Project/Site Name:			
Date:		Event Start Time:	
Sampler:		Rainfall Amount:	
Sampling Event Type:	☐ Storm Water	☐ Non-storm water	☐ Non-visible pollutant

Field Meter Calibration			
pH Meter ID:		Turbidity Meter ID:	
Calibration Date/Time:		Calibration Date/Time:	

Field pH and Turbidity Measurements

Were field duplicates taken? ☐ Yes ☐ No

Discharge Location	% Total Daily Flow	pH	Turbidity	Time

Additional Sampling Notes

(weather, color, odor, BMPs, other samples etc.)

Estimated Event End:	

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Contractor Training Log

Note: Copies of completed forms and training certifications should be included in Appendix J.

General Information			
Project/Site Name:		WDID #:	
Project Location:			
Specific Training Objective:			
Training Location:		Date:	
Instructor:		Telephone:	
Course Length:	☐ hours ☐ minutes		

Training Topic(s)	
☐ Good Housekeeping	☐ Sediment Control
☐ Erosion Control (& Surplus BMPs)	☐ Tracking Control
☐ Wind Erosion Control	☐ Non-Stormwater Management
☐ Risk Level/Storm Water Sampling	☐ Waste Management and Materials Pollution Control
☐ Operating Hours	☐ Identification of QSPs and Delegates
☐ Sensitive Resources	☐ Topsoil Preservation
☐ SWPPP Storage Location	☐ Other:

Attendees
Attach additional forms if necessary

Name & Title	Company	Phone

Training Log

Attendees Attach additional forms if necessary		
Name & Title	**Company**	**Phone**

COMMENTS:

Pacific Gas and Electric Company®

QSP Delegate Training Log

General Information			
QSP Delegate Name:			
Project/Site Name:		WDID#:	
Project Location:			

Delegated Responsibilities	
☐ Stormwater Visual Inspections	☐ Sampling
☐ BMP Inspections	☐ BMP Maintenance and Repair

Foundational Training		
Topic	**Date Completed**	**QSP Trainer (Name & QSP #)**
☐ Roles and Responsibilities		
☐ Forecast Information		
☐ Documentation and Reporting Procedures		

Site-Specific Training		
Topic	**Date Completed**	**QSP Trainer (Name & QSP #)**
☐ Visual Inspections		
☐ Sample Collection Procedures		
☐ Sample Reporting Procedures		
☐ BMP Implementation		

Attach documentation of external training (e.g., course completion certificates or credentials). Copies of completed forms and training certifications should be included in Appendix J.

COMMENTS:

NAL Exceedance Report

Construction Site & Run-on Evaluation

Pacific Gas and Electric Company

Site Name: _____

Exceedance Date: _____ Report Date: _____

Preparer Name: _____ WDID Number: _____

Sampler Name(s): _____

Assessment of Existing BMPs

[Insert a narrative description of all of the BMPs that were in place associated with the discharge sample(s) with the NAL Exceedance(s)]

Probable Cause

[Insert a narrative description of the opinion of probable cause of the NAL Exceedance including source areas and BMP deficiencies. If run-on to the project may have contributed to the NAL exceedance, also include details, run-on sampling location(s), and analytical results of the run-on. Ensure the probable cause of the exceedance relates to the type of exceedance (pH vs. Turbidity)]

Proposed Corrective Actions Taken

[Enter action Item]	[Implementation Date]
[Enter action Item]	[Implementation Date]
[Enter action Item]	[Implementation Date]

Attachment A – Ad Hoc Report

[Print and attach the Ad Hoc Report that was generated in SMARTS for the NAL Exceedance]

Attachment B – Photographs

[Print and attach the photographs of the corrective actions taken]

Pacific Gas and Electric Company®

Unauthorized Discharge Reporting Form

General Information			
Project/Site Name:			
Date:		Event Start Time:	
Inspector:		Event Rainfall Amount:	
Sampling Event Type:	☐ Unauthorized Discharge	☐ Non-Visible Pollutant Discharge	☐ Other

Sample Results

Describe any sampling results, including daily average and specific locations with high values.
Record analytical methods, method reporting units, method detection limits, and time of sampling.

Cause

Describe visual observations, the BMPs, and the situation leading to the exceedance or discharge.

Solution

Describe corrective actions taken or planned to be taken to remedy the situation.

Report By (Name/Title): **Signature:**

Chain of Custody

Report To:
Name:
Address:
Phone #:
Project Name:
Sampled By:

Date	Time	Sample ID	Container No.	Container Type	Preservative	Analysis Requested						Turn Around Days	Special Instructions

Pacific Gas and Electric Company®

Destination Laboratory

Suspected Constituents:

Relinquished by (sign)	Print Name/Company	Date	Time	Received by (sign)	Print Name/Company

Method of Shipment:	Hand Delivery ☐	Fed-Ex ☐	US Mail ☐	Other _____ ☐

Appendix F

Contractors and Subcontractors



Pacific Gas and Electric Company®

Pacific Gas and Electric Company®

Contractors and Subcontractors

Company Name	Contact Name	Work Address	Telephone Number	Emergency Contact Number	Area of Responsibility

Appendix G

Construction General Permit



Pacific Gas and Electric Company®

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD
1001 I Street Sacramento, CA 95814
https://www.waterboards.ca.gov

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES (GENERAL PERMIT)

ORDER WQ 2022-0057-DWQ
NPDES NO**. CAS000002**

This Order was adopted by the State Water Resources Control Board on:	September 8, 2022
This Order shall become effective on:	September 1, 2023
The statewide programmatic permitting option per Section III.B.4 of this Order shall become effective on:	December 17, 2022
This Order shall expire on:	August 31, 2028

IT IS HEREBY ORDERED that this Order supersedes Order 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-0006-DWQ except for: (1) the requirement to submit annual reports by September 1, 2023, (2) enforcement purposes, and (3) as set forth in Section III.C of this Order. The discharger shall comply with the requirements in this Order to meet the provisions contained in Division 7 of the California Water Code (commencing with § 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act and regulations and guidelines adopted thereunder.

IT IS ALSO HEREBY ORDERED that on or after December 17, 2022, a discharger deploying Executive Order N-73-20 may obtain regulatory coverage through the statewide programmatic permitting option in Section III.B.4 under Order 2009-0009-DWQ as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ until September 1, 2023.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on September 8, 2022.

AYE:	Chair E. Joaquin Esquivel Board Member Sean Maguire Board Member Laurel Firestone Board Member Nichole Morgan
NAY:	None
ABSENT:	Vice Chair Dorene D'Adamo
ABSTAIN:	None

Courtney Tyler for
Jeanine Townsend
Clerk to the Board

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I. FINDINGS

The State Water Resources Control Board (State Water Board) finds that:

1. The Federal Water Pollution Control Act, also referred to as the Clean Water Act, prohibits certain discharges of stormwater containing pollutants to waters of the United States except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit (Title 33 United States Code (U.S.C.) §§ 1311 and 1342(p); also referred to as Clean Water Act §§ 301 and 402(p)). The United States Environmental Protection Agency (U.S. EPA) promulgates federal regulations to implement the Clean Water Act's mandate to control pollutants in stormwater runoff discharges. (Title 40 Code of Federal Regulations (CFR) Parts 122, 123, and 124). The federal statutes and regulations require discharges to waters of the United States comprised of stormwater associated with construction activity to obtain NPDES permit coverage (except operations that result in disturbance of less than one acre of total land area and that are not part of a larger common plan of development or sale). Construction activity includes, but is not limited to, clearing, demolition, grading, excavation, and other land disturbance activities. The NPDES permit shall require implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate pollutants in stormwater runoff. The NPDES permit shall also include any additional requirements necessary to achieve applicable water quality standards.
2. Consistent with Water Code, § 13374, this NPDES permit also serves as waste discharge requirements for discharges of pollutants in stormwater runoff (stormwater discharges) associated with construction and land disturbance activities and is hereinafter referred to as General Permit.
3. A "discharger" is a person, as defined in Water Code § 13050(c), which includes companies and governmental bodies, subject to this General Permit who is responsible for compliance with this General Permit. The discharger designates the Legally Responsible Person(s) to serve as a primary signatory when required to sign, certify, and submit documents or information for this General Permit. The Legally Responsible Person(s) may also designate a Duly Authorized Representative(s) to sign, certify, and submit documents or information for this General Permit. "Discharger" and the designated "Duly Authorized Representative" are further defined in Attachment B of this General Permit.
4. This General Permit regulates discharges to waters of the United States from stormwater and authorized non-stormwater associated with construction activity from sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface.
5. This General Permit regulates discharges to waters of the United States from stormwater and authorized non-stormwater associated with construction activities

from all linear underground and overhead projects resulting in the disturbance of greater than or equal to one acre (Attachment E).

6. This General Permit does not preempt or supersede the authority of local stormwater management agencies to prohibit, restrict, or control stormwater discharges to municipal separate storm sewer systems or other watercourses within their jurisdictions.

7. This action to adopt a general NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (Public Resources Code § 21100, et seq.), pursuant to § 13389 of the California Water Code.

8. Regional Water Quality Control Boards (Regional Water Boards) establish water quality standards in water quality control plans. The State Water Board establishes water quality standards in various statewide water quality control plans, including the California Ocean Plan and the forthcoming Inland Surface Waters, Enclosed Bays, and Estuaries of California Plan. U.S. EPA establishes water quality standards in the National Toxic Rule and the California Toxic Rule.

9. Pursuant to 40 Code of Federal Regulations § 131.12 and State Water Board Resolution No. 68-16 (antidegradation policy), which incorporates applicable requirements of § 131.12, in high quality waters, discharges may not unreasonably affect beneficial uses, result in water quality less than the quality specified by water quality objectives, or cause a pollution or nuisance, except as allowed under the antidegradation policy. The federal antidegradation policy requires that “existing instream uses and the level of water quality necessary to protect the existing uses” are maintained and protected. If the baseline quality of a waterbody for a given constituent “exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected” through the requirements of this Order unless the State Water Board makes findings that: (1) any lowering of the water quality is “necessary to accommodate important economic or social development in the area in which the waters are located”; (2) “water quality adequate to protect existing uses fully” is assured; and (3) “the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control” are achieved. For high quality waters, Resolution No. 68-16 requires findings that any lowering of water quality is “consistent with the maximum benefit to the people of the State” and “will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies” and further that the discharge is subject to “waste discharge requirements which will result in the best practicable treatment or control of the discharge.”

10. The State Water Board finds that the permitted discharges authorized by this Order are consistent with the antidegradation provision of 40 CFR §131.12 and State Water Board Resolution No. 68-16, as set forth in Section I.H.2 in the Fact Sheet.

11. This General Permit serves as an NPDES permit in compliance with Clean Water Act § 402 and will be effective on September 1, 2023, except for the statewide programmatic permitting option per Section III.B.4 of this Order which will go into effect on December 17, 2022, provided the Regional Administrator of the U.S. EPA has no objection. If the U.S. EPA Regional Administrator objects to its issuance, this General Permit will not become effective until such objection is withdrawn.
12. The Regional Water Boards and the State Water Board, collectively referred to as the Water Boards, shall enforce the provisions herein following adoption and upon the effective date of this General Permit.
13. Stormwater discharges from dredge spoil placement that occur outside of waters of the state (upland sites) and that disturb one or more acres of land surface from construction activity are covered by this General Permit. This General Permit does not cover the discharge of dredged or fill material to waters of the state. Construction projects that include the discharge of dredged or fill material to waters of the state should contact the applicable Regional Water Board to obtain authorization for the discharge of dredged or fill material to waters of the state.
14. The discharge of dredged or fill material to a water of the United States is regulated by the United States Army Corps of Engineers under Clean Water Act § 404, and by the Water Boards under Clean Water Act § 401. The discharge of dredged or fill material to a water outside of federal jurisdiction may be regulated by the Water Boards under the Porter-Cologne Water Quality Control Act. This General Permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under CWA § 404 and does not constitute a waiver of water quality certification under CWA § 401.
15. Compliance with requirements contained in this General Permit does not supersede or constitute compliance with other regulatory requirements also applicable to discharges regulated by this General Permit, including waste discharge prohibitions in regional and statewide water quality control plans.
16. The State Water Board heard and considered all comments and testimony in a public hearing on August 4, 2021, as publicly noticed in accordance with state and federal laws and regulations. The State Water Board has prepared written responses to all significant comments.
17. The Homeland Security Act of 2002 (U.S. 116 STAT. 2135 and Title 6 U.S. Code Chapter 1 § 101) requires any information provided to the Water Boards per a regulatory action taken by the Water Boards shall comply with the Homeland Security Act and other federal law that address security in the United States; the discharger should not submit any information that does not comply.
18. The discharger is required to comply with this General Permit's conditions for all discharges associated with stormwater from construction activity and authorized non-stormwater discharges by this General Permit or another NPDES permit

issued by the State Water Board or a Regional Water Board. All other discharges are prohibited by this General Permit.

19. Unauthorized non-stormwater discharges are prohibited, including improper dumping, spills, or leakage from storage tanks or transfer areas. Non-stormwater discharges may contribute significant pollutant loads to receiving waters.

20. All discharges which contain a hazardous substance in excess of reportable quantities established in 40 Code of Federal Regulations §§ 117.3 and 302.4, are prohibited unless a separate NPDES permit has been issued to regulate those discharges.

21. Stormwater that is exposed to by-products and waste products resulting from demolition activities may transport and discharge pollutants off-site and into receiving waters.

22. In 2008, the State Water Board and the California Stormwater Quality Association (CASQA) led a group of stakeholders in developing and establishing the Construction General Permit Training Team (CGPTT). Subsequently, the CGPTT developed the training program and certification process for Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (QSD) and the Qualified SWPPP Practitioner (QSP) conducting work required by this General Permit. In 2010, CASQA and the State Water Board entered into a Memorandum of Agreement to document their respective understandings, roles, and responsibilities for the implementation of the QSD/QSP training program. The Memorandum of Agreement notes that the CASQA QSD/QSP Training Program constitutes a State Water Board-approved training course pursuant to the Construction Stormwater General Permit. The Memorandum of Agreement also documents that CASQA will continue to lead the QSD/QSP training program, with guidance from the CGPTT.

23. Per the Memorandum of Agreement, CASQA is responsible for qualifying and overseeing Trainers of Record who deliver the official QSD/QSP training program curricula in a manner consistent with the standards established by the CGPTT.

24. All California professional engineering, land surveying, and geology work is licensed by the Board for Professional Engineers, Land Surveyors, and Geologists.[1] Pursuant to the Professional Engineers Act (Bus. and Prof. Code § 6700, et seq.), all engineering work is required to be performed by a California licensed professional engineer. Pursuant to the Profession Land Surveyor's Act (Bus. and Prof. Code §§ 8700 – 8805), all land surveying work is required to be performed by a California licensed profession land surveyor. Pursuant to the Professional Geologist and Geophysicist's Act (Bus. and Prof. Code §§ 7800 –

1 Department of Consumer Affairs, California Board for Professional Engineers, Land Surveyors, and Geologists website <https://www.bpelsg.ca.gov/> [as of July 2022]

7887), all geological work is required to be performed by a California licensed professional geologist.

25. Precipitation events can occur at any time of the year in California. On-site stormwater management is necessary throughout the entire year to ensure sites implement adequate erosion and sediment controls prior to the onset of a precipitation event, even if construction is planned only during the typically dry season.

26. Soil particles smaller than 0.02 millimeters (mm) (i.e., finer than medium silt) do not settle easily using conventional measures for sediment control (i.e., sediment basins). Fine particles discharged into surface waters cause downstream impacts to beneficial uses in the receiving water. Actively treating construction stormwater discharges with properly operated and maintained active treatment systems can reduce the turbidity level and sediment concentration in the discharge to levels that comply with receiving water limitations.

27. The State Water Board convened a Blue-Ribbon Panel (Panel) of stormwater experts that submitted a report entitled “The Feasibility of Numeric Effluent Limits Applicable to Discharges of Stormwater Associated with Municipal, Industrial and Construction Activities,” dated June 19, 2006. The Panel concluded that numeric effluent limitations or numeric action levels are technically feasible to regulate construction stormwater discharges. The Panel concluded that numeric effluent limitations are feasible for discharges from sites that utilize an active treatment system. The Panel also concluded that numeric action levels are likely to be more commonly feasible. The previous permit (Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ) includes numeric action levels for pH and turbidity, and specific numeric effluent limitations for active treatment system discharges. The Panel was not asked to address requirements specific to the implementation of Total Maximum Daily Loads (TMDL) with assigned waste load allocations for construction stormwater sources.

28. The purpose of numeric action levels and associated monitoring requirements is to provide operational information regarding the performance of the site control measures used to minimize the discharge of pollutants and to protect receiving water beneficial uses from the adverse effects of construction-related stormwater and authorized non-stormwater discharges. Upon exceedance of a numeric action level, the discharger must take necessary corrective actions, including but not limited to maintenance, replacement, and/or installation of new best management practices. This General Permit relies on dischargers to implement an iterative process for best management practice to protect water quality. Failure to implement corrective actions in response to a numeric action level exceedance is a violation of this General Permit.

29. This General Permit requires compliance with receiving water limitations based on water quality standards established in regional or statewide water quality control plans. One of the receiving water limitations requires that construction

stormwater discharges and authorized non-stormwater discharges not cause or contribute to an exceedance of applicable water quality standards. Water quality standards apply to the quality of the receiving water, not the quality of the construction stormwater discharge. Therefore, compliance with the receiving water limitations generally cannot be determined solely by the effluent water quality characteristics. If any discharger's stormwater discharge causes or contributes to an exceedance of water quality standards, that discharger must implement additional BMPs or other control measures in order to attain compliance with the receiving water limitation. Compliance with water quality standards may, in some cases, require dischargers to implement controls that are more protective than controls implemented solely to comply with the technology-based requirements in this General Permit.

30. A Total Maximum Daily Load is the sum of the allowable loads of a single pollutant from all contributing point sources (waste load allocations) and non-point sources (load allocations), plus the contribution from background sources (40 Code of Federal Regulations § 130.2(i)). Discharges of stormwater from construction activities are considered point source discharges, and therefore must comply with NPDES permit requirements translated to be "consistent with the assumptions and requirements of any available waste load allocation for the discharge prepared by the state and approved by U.S. EPA pursuant to 40 Code of Federal Regulations § 130.7" (40 Code of Federal Regulations § 122.44 (d)(1)(vii)). In addition, Water Code § 13263, subdivision (a), requires that waste discharge requirements implement any relevant water quality control plans. Many TMDLs in water quality control plans include implementation requirements that may be translated into General Permit requirements and TMDL-specific numeric action levels and numeric effluent limitations.

31. Areas of Special Biological Significance are defined in the California Ocean Plan as "those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable." The California Ocean Plan prohibits the discharge of waste to Areas of Special Biological Significance unless identified in a State Water Board-approved exception.

32. The California Ocean Plan authorizes the State Water Board to grant an exception to California Ocean Plan provisions where the State Water Board determines that the exception will not compromise protection of ocean waters for beneficial uses and the public interest will be served.

33. On March 20, 2012, the State Water Board adopted Resolutions 2012-0012 and Resolution 2012-0031, which contain exceptions to the California Ocean Plan for specific discharges of stormwater and non-point sources. This resolution also contains the special protections that are to be implemented for those discharges to Areas of Special Biological Significance.

34. Dischargers are only allowed to discharge to an Area of Special Biological Significance when in compliance with Areas of Special Biological Significance-

specific requirements in a State Water Board-provided exception to the California Ocean Plan granted to the specific discharger.

35. On August 19, 2014, the U.S. EPA adopted regulations requiring all NPDES permits to include requirements to implement sufficiently sensitive test methods. This General Permit requires all laboratory analyses to be sufficiently sensitive and conducted according to test procedures under 40 Code of Federal Regulations Part 136. All analytical results less than the minimum level (reporting limit), as reported by the laboratory, will be assigned a value of zero (0) for any calculations required by this permit (e.g., numeric action level and numeric effluent limitation exceedance determinations), so long as a sufficiently sensitive test method was used as evidenced by the reported method detection limit and minimum level.

36. Specific types of passive treatment used in combination with other best management practices (BMPs) can prevent or reduce the discharge of fine particles from certain construction activities when implemented correctly.

37. Passive treatment is the application of natural or synthetic chemicals and products to reduce turbidity in discharges through coagulation and flocculation. Passive treatment does not rely on computerized, enclosed systems with pumps, filters, and real-time controls. Passive treatment may include pumps where they are necessary to move water around the site. The discharge of chemicals used in passive treatment can potentially cause or contribute to acute and chronic toxicity to aquatic life in receiving waters, potentially resulting in an exceedance of narrative or numeric water quality objectives in regional or statewide water quality control plans.

38. State Water Board Resolution 2005-0006, "Resolution Adopting the Concept of Sustainability as a Core Value for State Water Board Programs and Directing its Incorporation," and Resolution No. 2008-0030, “Requiring Sustainable Water Resources Management,” include performance standards for post-construction BMPs. The standards include the use of permanent post-construction BMPs that manage stormwater runoff rates to match pre-construction project site hydrology, and to sustain and ensure the physical structure and biological integrity of aquatic ecosystems in the receiving waters. This “runoff reduction” approach is analogous in principle to low impact development and is proven to protect watersheds and waterbodies from hydrologic-based adverse changes and pollution impacts associated with the post-construction landscape.

39. Linear underground and overhead projects are not subject to post-construction requirements due to the nature of their construction to return project sites to pre-construction conditions.

IT IS HEREBY ORDERED that all dischargers subject to this General Permit shall comply with the following conditions and requirements (including all conditions and requirements as set forth in the Attachments of this Order)[2]: State Water Board Order 2009-009-DWQ as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ (previous permit) is superseded as of the effective date of this General Permit except for enforcement purposes, the Annual Report required to be submitted by September 1, 2023, and as set forth in Section III.C.

II. SCOPE OF GENERAL PERMIT COVERAGE

II.A. Traditional Construction Activities Subject to this General Permit

This General Permit covers construction projects that include construction or land disturbance activities that result in a disturbance of one or more acres, or less than one acre but are part of a larger common plan of development or sale that totals one or more acres of land disturbance, such as the following:

1. Construction activity that includes, but is not limited to, clearing, grading, excavation, stockpiling, and demolition activities that expose or disturb soil.
2. Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to U.S. EPA regulations, such as dairy barns or food processing facilities.
3. Construction activity associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities pursuant to 40 Code of Federal Regulations § 122.26(c)(1)(iii), which:
    a. Had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 Code of Federal Regulations §§ 117.21 or 302.6 at any time since November 16, 1987;
    b. Had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to Code of Federal Regulations § 110.6 at any time since November 16, 1987; or
    c. Contributes to a violation of a water quality standard.

II.B. Traditional Construction Activities Not Subject to this General Permit

This General Permit does not apply to the following construction activity:

1. Routine maintenance. Routine maintenance is defined as activities intended to maintain the original line and grade, hydraulic capacity and/or purpose of

2 The attachments are part of this General Permit; the attachments are not separate orders or documents that will be updated independently by the State Water Board.

the facility. This General Permit further defines routine maintenance for road and highway projects as the replacement of the structural section, but not when the activity exposes the underlying soil or erodible subgrade. The road surface and base are not part of the subgrade. As such, those portions of a project that remove the paved road surface and base down to the erodible subgrade and/or underlying soil would not be considered routine maintenance.

2. Disturbances to land surfaces solely related to growing crops or agricultural operations such as disking, harrowing, terracing, and leveling, and soil preparation.
3. Discharges of stormwater from areas on tribal lands; construction on tribal lands is regulated by a federal permit.
4. Discharges of stormwater within the Lake Tahoe Hydrologic Unit. The Lahontan Regional Water Board has adopted its own permit to regulate stormwater discharges from construction activity in the Lake Tahoe Hydrologic Unit. Owners of construction sites in this watershed must apply for the Lahontan Regional Water Board permit rather than the statewide Construction Stormwater General Permit. Construction sites within the Lahontan region must also comply with the Lahontan Region Project Guideline for Erosion Control (R6T-2016-0010).[3]
5. Construction activity that disturbs less than one acre of land surface, unless part of a larger common plan of development or the sale of one or more acres of disturbed land surface.
6. Construction activity covered by an individual NPDES Permit for stormwater discharges.
7. Construction activity that is subject to the Industrial Stormwater General Permit:
    a. Landfill operations as described by Standard Industrial Classification (SIC) code 4953. Landfill operators typically enroll under the Construction Stormwater General Permit for initial construction and final closure of the landfill.
    b. Concrete manufacturers of prefabricated products, ready-mix concrete, or slurries that are delivered to construction sites require enrollment in the Industrial Stormwater General Permit. Examples of this industrial activity are those facilities primarily engaged in manufacturing concrete building blocks and bricks, other concrete products not building blocks and bricks,

3 Lahontan Regional Water Quality Control Board, Order R6T-2016-0010 (March 10, 2016), https://www.waterboards.ca.gov/lahontan/water_issues/programs/storm_water/docs/r6t_2016_0010_cgp_combined.pdf> [as of May 20, 2021]

or ready-mix concrete as categorized by Standard Industrial Classification (SIC) codes 3531, 3271, 3272, or 3273. Concrete manufacturing of prefabricated products, ready-mixed concrete, or slurries that are transported from construction sites where mixing occurs and delivered to a separate site require enrollment in the Industrial Stormwater General Permit.

8. Construction activity that discharges to combined sewer systems.
9. Discharges of stormwater identified in Clean Water Act § 402(l)(2), 33 USC § 1342(l)(2) (stormwater runoff from oil, gas, and mining operations) unless the discharge meets the conditions of 40 Code of Federal Regulations § 122.26(c)(1)(iii) as described in this General Permit.
10. Discharges of dredged or fill material to waters of the state. Those portions of the construction project that are located outside of waters of the state or waters of the United States are subject to this General Permit if the non-water portions disturb one or more acres of land.

II.C. Linear Underground and Overhead Projects Subject to this General Permit

1. Linear underground and overhead projects include, but are not limited to conveyance facilities, culverts, pipelines, or other linear corridors for:
   a. The transportation of any gaseous, liquid, liquescent, and slurry material;
   b. Cable line or wire for the transmission of:
      i. Electrical energy; or
      ii. Communications, including internet, telephone, telegraph, radio, or television messages.
   c. Ancillary facilities and substructures such as new access roads, helicopter landing zones, laydown yards, staging areas, substations, valve stations, etc. that primarily function as support for linear underground and overhead project construction activities.[4]
2. Construction support activities associated with linear underground and overhead projects include, but are not limited to:
   a. Activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment, vegetative management, and associated ancillary facilities); and

4 Regional Water Board staff may require, in writing, that the discharger obtain coverage through a traditional construction notice of intent when the construction of ancillary facilities more closely resembles traditional construction activities.

b. Activities including underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavating, boring and drilling, access road and pole/tower pad and cable/wire pull station, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and pavement repair or replacement, and stockpile/borrow locations.

II.D. Linear Underground and Overhead Projects Not Subject to this General Permit

This General Permit does not apply to the following linear underground and overhead project construction activity:

1. Routine maintenance projects. Routine maintenance projects are projects associated with operations and maintenance activities that are conducted on existing lines and facilities and within existing right-of-way, easements, franchise agreements, or other legally binding agreements of the discharger granting access to land. Routine maintenance projects include, but are not limited to projects that are conducted to:
   a. Maintain the original purpose of the facility or hydraulic capacity;
   b. Update existing lines[5] and facilities to comply with applicable codes, standards, and regulations regardless of if such projects result in increased capacity; and/or
   c. Repair leaks.
2. Routine maintenance does not include construction of new lines or facilities resulting from compliance with applicable codes, standards, and regulations.
3. Routine maintenance projects do not include those areas of maintenance projects that are outside of an existing right-of-way, franchise, easements, or agreements. When a project must secure new areas, those areas may be subject to this General Permit based on the area of disturbed land outside the original right-of-way, easement, or agreement.
4. Linear underground and overhead project construction activity does not include field activities associated with the planning and design of a project (e.g., activities associated with route selection).
5. Tie-ins conducted immediately adjacent to “energized” or “pressurized” facilities by the discharger are not considered construction activities where all other linear underground and overhead project construction activities associated with the tie-in are covered by a Notice of Intent and SWPPP of a third party or municipal agency.

5 Update existing lines includes replacing existing lines with new materials or pipes.

III. OBTAINING, REVISING, AND TERMINATING PERMIT COVERAGE

III.A. Obtaining Permit Coverage for Traditional Construction Projects

III.A.1. The Discharger shall obtain a Waste Discharge Identification (WDID) number prior to the commencement of construction activity by electronically certifying and submitting the following Permit Registration Documents through the State Water Board Stormwater Multiple Application and Report Tracking System (SMARTS)[6]:

a. Notice of Intent, including Risk Level determination as described in Attachment D.1;

b. Site Drawings and Maps;

c. Stormwater Pollution Prevention Plan (SWPPP) (see Section IV.O, below);

d. Applicable plans, calculations, and other supporting documentation for compliance with existing permitted Phase I or Phase II municipal separate storm sewer system post-construction requirements or the post-construction standards of this General Permit;

e. Annual fee per the current 23 California Code of Regulations Chapter 9 fee schedule for NPDES stormwater permits; and

f. All applicable additional Permit Registration Document information as required in Attachment D.2 of this General Permit.

III.A.2. An applicant is considered to have General Permit regulatory coverage and can commence construction activity upon receipt of a WDID number generated by SMARTS. Dischargers shall post their site-specific WDID number in a site location that is viewable to the public or readily available upon request if unable to post publicly.

III.A.3. In the case of a public emergency that requires immediate construction activities involving one acre or more of land disturbance, a discharger shall submit a brief description of the emergency construction activity to the applicable Regional Water Board within five calendar days of the onset of site construction. The discharger shall then submit the required Permit Registration Documents through SMARTS within 30 calendar days of commencing site activity.

III.A.4. Failure to obtain General Permit coverage for stormwater and non-stormwater discharges covered by this General Permit to waters of the United States is a violation of the Clean Water Act and the California Water Code.

6 Dischargers are required to have a signed original Electronic Authorization Form on file with the State Water Board for each organization in SMARTS.

III.B. Obtaining Permit Coverage for Linear Underground and Overhead Projects

The discharger for a linear underground and overhead project shall designate a Legally Responsible Person for each of its WDIDs numbers. The discharger is responsible for enrollment under and compliance with this General Permit. The Legally Responsible Person, as defined in Attachment B of this General Permit, shall fulfill the electronic signature and certification requirements to obtain General Permit coverage (see Section VI.H, Electronic Signature and Certification Requirements.)

III.B.1. A discharger for a linear underground and overhead project shall obtain General Permit coverage under one or more applications submitted through SMARTS, per the requirements in Attachment E of this General Permit.

III.B.2. The Legally Responsible Person shall electronically certify and submit the following applicable Permit Registration Documents through SMARTS[7] and obtain a WDID number prior to the commencement of any construction activities.

a. Notice of Intent, including linear underground and overhead project type determination as described in Attachment E.1;

b. Site-specific Stormwater Pollution Prevention Plan (SWPPP), Drawings, and Maps (see Section IV.O, below);

c. Annual fee per the current 23 California Code of Regulations Chapter 9 fee schedule for NPDES stormwater permits; and

d. All applicable additional Permit Registration Document information as required in Attachment E.2 of this General Permit.

III.B.3. Regulatory Coverage for linear underground and overhead project segments

III.B.3.a. The discharger may separate a contiguous linear underground and overhead project into separately regulated segments. Linear underground and overhead project segments may consist of different risk types.

III.B.3.b. The discharger shall include a clear description in the Permit Registration Documents regarding how each segment relates to the overall linear underground and overhead project by identifying one or more of the following descriptions:

i. The segments are managed by separate contractors;

ii. The segments are constructed during distinct project phases; or

iii. The segments are located in different topography, watersheds, or jurisdictional boundaries.

7 Dischargers are required to have a signed original Electronic Authorization Form on file with the State Water Board for each organization in SMARTS.

III.B.3.c. Dischargers with corresponding linear underground and overhead project segments that cross Regional Water Board(s) boundaries (e.g., different segments of same project located within different Regional Water Board jurisdictions) must file separate Permit Registration Documents.

III.B.4. Programmatic Permitting Regulatory Coverage for linear underground and overhead projects

III.B.4.a. A discharger may submit one Notice of Intent requesting regional programmatic General Permit coverage for multiple non-contiguous linear underground and overhead projects, if the projects:

i. Are located within one Regional Water Board jurisdiction;

ii. Are a group of projects of similar scopes with common construction activities; and

iii. Have the same Legally Responsible Person.

III.B.4.b. Effective December 17, 2022, a discharger deploying Executive Order N-73-20, per the requirements and due dates of the executive order, or amendments therein, may submit one Notice of Intent requesting statewide programmatic General Permit coverage for multiple non-contiguous linear underground and overhead broadband projects, where the installation of the utilities is outside of a construction project that is otherwise regulated under this General Permit.

III.B.4.b.i. A discharger deploying Executive Order N-73-20 may apply for a statewide programmatic permit for regulatory coverage under Order 2009-0009-DWQ (as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ), from December 17, 2022 until September 1, 2023, by submitting the information required by Attachment E.2.

III.B.4.c. Linear underground and overhead project dischargers with programmatic permitting coverage shall submit, prior to the commencement of any construction activities for each non-contiguous site, a:

i. Common SWPPP with the Notice of Intent covering all the activities common to the projects; and

ii. Linear Construction Activity Notification for each site describing site-specific information in accordance with Attachment E.2, Section II.A.2.

III.B.5. An applicant is considered to have General Permit regulatory coverage and may commence construction activity upon receipt of a WDID number generated by SMARTS Dischargers shall post the project-specific WDID number in a site location that is visible to the public or readily available upon request if unable to post publicly.

III.C. Regulatory Coverage under the Previous Permit

III.C.1. Dischargers that obtain coverage under State Water Board Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ, (previous permit) prior to the effective date of this permit, may continue coverage under the previous permit until its regulated project(s) receive an approved Notice of Termination from the Regional Water Board, up to two years after the effective date of this General Permit. Two years after September 1, 2023, all existing Notices of Intent subject to the previous permit will be administratively terminated.

III.C.1.a. A discharger continuing regulatory coverage under the previous permit cannot increase a project's disturbed acreage through the Change of Information process, on or after the effective date of this General Permit; the discharger must submit a Notice of Intent for coverage under this General Permit for the increase in disturbed acreage.

III.C.2. Dischargers with the previous permit's Small Construction Rainfall Erosivity waiver may continue to operate under a project's active waiver until it expires. Waivers granted under the previous permit cannot be modified or extended.

III.C.3. Dischargers that submit a Notice of Termination for previous permit termination up to two years after the effective date of this General Permit and receive Notice of Termination approval from the Regional Water Board are not subject to this General Permit (unless the discharger subsequently submits new Permit Registration Documents).

III.C.4. Dischargers with coverage under the previous permit that need regulatory coverage after September 1, 2025 under this General Permit, shall submit, in SMARTS, the following items by August 31, 2025:

a. A certification of the discharger's intent to obtain regulatory coverage under this General Permit;

b. A revised Notice of Intent and other Permit Registration Documents, revised to address new or changed requirements per this General Permit, as applicable; and

c. The applicable fee.

III.D. Small Construction Rainfall Erosivity Waiver

III.D.1. Dischargers are eligible for the Small Construction Rainfall Erosivity waiver (waiver) if:

a. The site is between one and five acres; and

b. The construction activity will take place during a period when the calculated rainfall erosivity factor is less than five.

III.D.2. Dischargers with small sites that are part of a larger common plan of development, or dischargers that have programmatic permit coverage, do not qualify for a waiver unless the entire project qualifies for a waiver.

III.D.3. To request a waiver, the Legally Responsible Person shall submit a waiver application through SMARTS, and pay the appropriate fee to the State Water Board. If approved by the State Water Board, SMARTS will electronically provide the discharger with the waiver and a unique waiver identification number. The waiver is effective on the date the waiver identification number is issued and valid between the construction start and end dates, as entered in the waiver application.

III.D.4. A discharger qualifying for a waiver shall obtain a waiver identification number prior to starting any construction activities regulated by this General Permit.

III.D.5. A waiver is valid only if the correct start and end dates of construction activities are entered (and updated if necessary) through the Change of Information process in SMARTS.

III.D.6. The discharger may revise an original construction start date though the Change of Information process in SMARTS and shall provide documentation demonstrating the project had not started on the date originally submitted through SMARTS.

III.D.7. The discharger shall update the project end date through the Change of Information process in SMARTS prior to expiration of the waiver if the project completion date is anticipated to extend past the waiver expiration date. If the updated project end date results in a rainfall erosivity factor of five or greater, the discharger shall obtain coverage under this General Permit. If the discharger fails to update the project end date prior to expiration of waiver, they shall immediately obtain coverage under this General Permit.

III.D.8 The discharger shall post the unique waiver identification number in a site location that is visible to the public or readily available upon request if unable to post publicly.

III.D.9. A waiver does not provide General Permit coverage. Dischargers with a waiver are not required to comply with post-construction, sampling, monitoring, or other SWPPP requirements in this General Permit.

III.D.10. Regional Water Board staff may terminate a waiver if the Regional Water Board staff determines the discharge of stormwater runoff causes or contributes to an exceedance of a water quality standard or violates a prohibition in an applicable regional or statewide water quality control plan. The Regional Water Board Executive Officer or their delegate may require the discharger to obtain regulatory coverage under this General Permit or an NPDES permit issued by the Regional Water Board.

III.E. Notice of Non-Applicability

III.E.1. A discharger claiming “No Discharge” through a Notice of Non-applicability (NONA) as set forth in Water Code § 13399.30 shall meet the following eligibility requirement:

a. The site’s physical location is not hydrologically connected to waters of the United States.

III.E.2. When claiming the “No Discharge” option, the discharger shall submit and certify via SMARTS both the NONA and a No Discharge Technical Report. The No Discharge Technical Report shall identify the site by address or parcel number and demonstrate that the site meets the eligibility requirement described above in Section III.E.1.a.

III.E.3. The No Discharge Technical Report shall be signed (wet signature and license number) by a California licensed professional engineer or geologist with hydrological expertise.

III.E.4. The Regional Water Board may require the No Discharge Technical Report to be reassessed if it determines that there are errors in the No Discharge Technical Report or if the site is hydrologically connected to waters of the United States.

III.F. Revising Permit Coverage Information

The discharger shall revise permit coverage information, as appropriate, to:

III.F.1. Update Construction Start and End Dates

III.F.1.a. The discharger shall electronically certify and submit a revised Notice of Intent through a Change of Information in SMARTS, when the construction start or end date changes, recalculating sediment risk and revising the SWPPP as appropriate. The Change of Information shall be submitted at least 14 days prior to the date that was modified, unless infeasible due to unforeseen circumstances.

III.F.1.b. If the discharger is revising the construction start date to a later date than previously submitted, the Change of Information shall contain time-stamped photo documentation depicting that construction activities have not commenced for the entirety of the site.

III.F.2. Reduce Acreage

III.F.2.a. When a portion of the site meets conditions for termination of coverage (Section III.H) or is sold/transferred to a new owner, the discharger may reduce the disturbed acreage covered under the General Permit. The discharger reducing disturbed acreage shall electronically certify and submit the following Permit Registration Document revisions in SMARTS, through a Change of Information, within 30 days of the reduction in acreage:

i. A revised Notice of Intent indicating the new site size;

ii. Photos demonstrating final stabilization, if applicable;

iii. Revised site map(s) showing (as applicable) acreage currently under construction; acreage sold/transferred, and/or added; and acreage currently stabilized in accordance with the Conditions for Termination of Coverage in Section III.H below; and

iv. A revised SWPPP to match the change in acreage.

III.F.2.b. For a larger common plan of development for residential use, the discharger may, through the Change of Information process, remove residential lots from permit coverage once the lot meets the following criteria:

i. The residential lot has been sold to the individual homeowner(s) for residential use;

ii. A certificate of occupancy or equivalent document, is maintained on-site and can be made available during inspections;

iii. The lot is less than one acre of disturbance;

iv. All construction activity conducted on the lot by the discharger is complete; and

v. The discharger has temporarily stabilized any unfinished yard and landscaping areas with BMPs.

III.F.2.c. The discharger shall upload, as an attachment in SMARTS, documentation of a contract (e.g., Covenants, Conditions, and Restrictions) requiring the individual homeowner to stabilize the yard and landscaping within one year and to maintain the temporary BMPs until the yard and landscaping are stabilized.

III.F.2.d. The discharger shall maintain General Permit coverage for any site, parcel, or individual lot that has not received Change of Information or Notice of Termination approval from the Regional Water Board or obtained coverage under the new owner's Notice of Intent.

III.F.3. Termination of Programmatic Permit Coverage for Linear Underground and Overhead Projects

III.F.3.a. Upon completion of construction activities for a specific site with linear underground and overhead project programmatic permit coverage, the discharger shall submit a Linear Construction Termination Notification for each completed linear segment.

III.F.3.b. The site must meet the termination conditions in Section III.H.3 below.

III.F.3.c. The Linear Construction Termination Notification must include photos demonstrating final stabilization.

III.F.3.d. Regional Water Board approval of the Linear Construction Termination Notification terminates coverage for the specific site.

III.F.4. Increase Acreage

III.F.4.a. If the disturbed acreage of the site will increase, the discharger shall certify and submit the following Permit Registration Documents revisions in SMARTS, through a Change of Information, prior to the increase in disturbed acreage:

i. A revised Notice of Intent indicating the new site size;

ii. A revised site map(s) showing (as applicable) acreage currently under construction; acreage sold, transferred, and/or added; and acreage currently stabilized in accordance with the conditions for terminating coverage in Section III.H below; and

iii. A revised SWPPP to match current site size.

III.F.4.b. The discharger shall submit the applicable fees, in accordance with the revised fee notification, within 14 calendar days of the notification date. The Change of Information will be returned if these fees are not received by the State Water Board within 14 calendar days of the notification date.

III.F.4.c. Regulatory coverage under this General Permit for the added acreage is not approved until the Regional Water Board approves the Change of Information.

III.F.4.d. If the increased acreage is greater than one-fourth mile from the existing site boundary and is an acre or larger, the discharger is required to submit a separate Notice of Intent.

III.F.5. Change in Ownership

III.F.5.a. Prior to a sale/transfer of a site, parcel, or individual lot (change of ownership), the existing discharger shall submit a Notice of Termination for change of ownership and a certification that the new owner has been notified of applicable requirements to obtain new General Permit for the qualifying activities. The existing discharger certification shall include the name, address, telephone number, and email address of the proposed new owner in the Notice of Termination submitted through SMARTS.[8]

III.F.5.b. General Permit coverage is not transferable to a new owner. The new discharger will need to submit their own Permit Registration Documents to obtain a new WDID number prior to continuing construction activities and/or installing final landscaping (including meeting conditions for termination of coverage). The new discharger shall enter the original project start date (initial date of disturbance) from the previous discharger(s).

8 Dischargers that are submitting a Notice of Termination for a change of ownership, where the new owner will obtain permit coverage to complete construction, are not required to comply with the requirements in Order Section III.H.

III.G. Inactive Projects

III.G.1. Dischargers with projects where all construction activities (including passive treatment, active treatment systems, and/or active equipment) will be suspended for 30 days or more may submit a Change of Information through SMARTS to revise the SWPPP. The Change of Information shall include:

a. Revised site map depicting the current status of construction; and

b. Photographs showing the temporary stabilization BMPs that were implemented.

III.G.2. Upon Regional Water Board approval of the Change of Information, sampling may be suspended, and monitoring and inspections may be reduced as follows:

III.G.2.a. A QSD shall visit the inactive project within 14 days of Regional Water Board approval of the Change of Information to verify that the SWPPP is being implemented accordingly. If necessary, the QSD shall amend the SWPPP to address all new conditions not previously considered through a Change of Information in SMARTS.

III.G.2.b. A QSP or trained delegate shall visually inspect the inactive project at least once every calendar month and prior to any weather pattern that is forecasted to have a 50 percent or greater chance of 0.5 inches or more in a 24-hour period. Please refer to Attachments D and E Section III.C for information pertaining to visual inspection requirements.

i. The QSP or trained delegate shall verify BMPs are functioning in accordance with the SWPPP and implement corrective actions where necessary.

III.G.2.c. The above inspections are not required during dangerous weather conditions or when access to the site is infeasible (e.g., due to snow accumulation) or unsafe.

III.G.3. Dischargers wishing to resume construction activities or the use of passive treatment, active treatment systems, and/or active equipment shall submit a Change of Information through SMARTS requesting to resume the project along with a revised site map based on current site conditions. Upon Regional Water Board approval of the Change of Information, the discharger is required to comply with all applicable requirements of this General Permit to resume construction activities at the site.

III.H. Terminating Permit Coverage

III.H.1. To terminate General Permit coverage, the discharger shall electronically certify and submit the required documentation (Section III.H.2 below) to demonstrate compliance with all General Permit coverage termination requirements, including applicable post-construction BMPs and/or low impact development features.

III.H.2. The discharger shall electronically certify and submit the following through SMARTS to be considered for General Permit coverage termination:

a. A complete Notice of Termination;

b. QSP-prepared final Notice of Termination inspection with the QSP name and valid QSP certificate number;

c. A final site map; and

d. Photos demonstrating final stabilization and the implementation of applicable post-construction BMPs and/or low impact development.

III.H.3. The discharger shall certify and submit a final site map, as part of the Notice of Termination documents through SMARTS. The Notice of Termination final site map shall, at minimum, include the following:

a. Project boundaries and adjacent lands with labeled key features, such as roadways and waterbodies;

b. Developed drainage basin boundaries and discharge location points;

c. Site entrances and exits, lot boundaries, roads, structures, and features related to the project that may be used as a reference;

d. Specific permanent erosion control BMPs, post-construction BMPs, and low impact development features;

e. Individual erosion control BMPs (including final landscaping) identified using hatch patterns, symbols, or shading unique to each BMP;

f. Location and orientation of all photos used to document final site conditions and demonstrate compliance with post-construction requirements of this General Permit; and

g. If applicable, areas of the site being transferred to new ownership, and the name and contact information of the owner.

III.H.4. The Regional Water Board will consider a site, parcel, or individual lot complete only when all portions of the site comply with all the following conditions:

a. The discharger has completed all construction activity;

b. There is no greater potential for construction-related stormwater pollutants to be discharged into site runoff than prior to the construction activity;

c. Construction-related equipment and temporary BMPs have been removed from the site, except as set forth in Section III.F.2.b above;

d. Construction materials and wastes have been disposed of properly;

e. Soils disturbed by construction activities have been permanently stabilized (final stabilization), except as set forth in Section III.F.2.b above, using materials that:

i. Have a product life that support the full and continued stabilization of the site;

ii. Achieve stabilization without becoming trash or debris; and

iii. Minimize the risk of wildlife entrapment;

f. The discharger has ensured the QSP completed on-site visual inspections and verified the site complies with all Notice of Termination requirements, including installation of post-construction stormwater runoff BMPs and/or low impact development features;

g. The Legally Responsible Person has submitted the information in the Notice of Termination and has certified and submitted through SMARTS; and

h. The discharger has demonstrated that the site complies with all Notice of Termination conditions above (Section III.H) and all final stabilization conditions by one of the following methods:

i. **70 percent final cover method**. No computational proof required. Requires permanent vegetative cover to be evenly established over 70 percent of all disturbed and exposed areas of soil (non-paved or non-built). In areas that naturally have low vegetative coverage (e.g., deserts), 70 percent of natural conditions of local undisturbed areas is acceptable. Photos of all site areas are required to verify compliance with the 70 percent final cover requirement;

OR

ii. **Revised Universal Soil Loss Equation (RUSLE or RUSLE2) method.** Computational proof required. Site conditions shall match values used in method computation. Photos of all site areas are required to verify pre-construction and post-construction conditions used in the computations;

OR

iii. **Custom method.** The discharger may request approval from the Regional Water Board to use a method or analytical model other than Section III.H.4.h.i and 4.h.ii above to demonstrate that the site complies with the “final stabilization” requirements. Photos of all site areas are required to verify the custom method used.

III.H.5. The Notice of Termination photo documentation for General Permit compliance verification shall include photos of the site’s final site conditions; post-construction BMPs and/or low impact development features; a description of the corresponding location, and orientation of photos as indicated on the final site map.

III.H.6. The Notice of Termination shall include a long-term maintenance plan[9] for the post-construction stormwater runoff BMPs and/or low impact development features being implemented.

III.H.7. The Notice of Termination will be automatically approved 30 calendar days after the date of Notice of Termination is submitted, unless, within the 30 calendar days the Regional Water Board notifies the discharger through SMARTS that the Notice of Termination has been denied, returned, or accepted for review.

III.H.8. All General Permit requirements remain in effect until the Notice of Termination is approved. The Legally Responsible Person will be notified through SMARTS communication when the discharger's General Permit coverage and corresponding WDID number are terminated.

IV. PERMIT REQUIREMENTS

IV.A. Authorized Non-Stormwater Discharges

IV.A.1. Non-stormwater discharges from the following de-chlorinated potable and non-potable water sources are authorized if they comply with the requirements in Section IV.A.2 of this General Permit:

a. Fire-fighting activity;

b. Fire hydrant system flushing;

c. Irrigation of vegetative erosion control measures;

d. De-chlorinated potable water, including uncontaminated water line flushing;

e. Hydrostatic pipe flushing and testing water;

f. Air conditioning or compressor condensate;

g. Uncontaminated groundwater or spring water from construction dewatering activities in compliance with Attachment J; and

h. Water to control dust.

IV.A.2. The above non-stormwater discharges are authorized under the following conditions:

a. The discharge is not routed through site areas with exposed soil, except for water used for dust control or to vegetation irrigation to stabilize areas;

b. The discharge does not cause or contribute to an exceedance of water quality standards in the receiving water;

9 For the purposes of this requirement, a long-term maintenance plan shall be designed for a minimum of five years, and describe the responsible party(ies), schedule, and procedures needed to ensure that post-construction features are adequately maintained and functional.

c. The discharge complies with other applicable requirements of this General Permit including applicable action levels, effluent limitations, and monitoring and reporting requirements;

d. The discharge is not prohibited by an applicable regional or statewide water quality control plan;

e. The discharge is in accordance with other applicable State and Regional Water Board permits; and

f. The discharge does not contain toxic constituents in toxic amounts and does not cause toxicity in the receiving water body.

IV.B. Discharge Prohibitions

IV.B.1. Dischargers shall not violate any discharge prohibitions contained in applicable water quality control plans.

IV.B.2. Discharges to Areas of Special Biological Significance (ASBS) are prohibited by the California Ocean Plan, unless granted an exception issued by the State Water Board.

IV.B.3. All discharges are prohibited except for the stormwater and non-stormwater discharges specifically authorized by this General Permit or another NPDES permit. The discharger shall notify the Regional Water Board of existing or anticipated non-stormwater discharges not authorized by this General Permit, within 24 hours of the discharge, to determine if regulatory coverage is necessary through a separate NPDES permit.

IV.B.4. All of the following discharges are prohibited:

a. Debris and trash, in accordance with State Water Board Resolution 2015-0019, the Trash Provisions of the Water Quality Control Plan for Ocean Waters of California and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, as applicable to construction stormwater discharges.

i. To comply with the Trash Provisions, dischargers shall implement, operate, and maintain trash management, treatment, and institutional controls to eliminate debris and trash from all stormwater discharges and authorized non-stormwater dischargers consistent with the prohibition of the discharge of debris and trash regulated by this General Permit. If the discharger is unable to comply with the prohibition of the discharge of debris and trash, the discharger must submit, for Regional Water Board Executive Office or designee approval, an amended Stormwater Pollution Prevention Plan addressing:

1. A demonstration that the discharger is unable to comply with this outright prohibition of the discharge of debris and trash; and

2. A demonstration that the discharger's chosen combination of trash management, treatment, and institutional controls achieves full capture system equivalency.

b. Treatment chemicals except as authorized in Attachment F and G;

c. Wastewater from washout or cleanout of areas, structures or equipment with concrete, grout, stucco, paint or other construction materials;

d. Form-release oils and curing compounds;

e. Fuels, oils, fluids, or other materials used in vehicle and equipment operation and maintenance;

f. Soaps, solvents, or detergents (e.g., used in vehicle equipment washing or external building wash down); and

g. Toxic or hazardous substances (e.g., asbestos, lead, mercury, or PCBs).

IV.C. Effluent Limitations and Action Levels

IV.C.1. Narrative Effluent Limitations

IV.C.1.a. Stormwater discharges and authorized non-stormwater discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 Code of Federal Regulations §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

IV.C.1.b. Dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and management practices set forth in the order and attachments of this General Permit that achieve best available technology (BAT) for toxic and non-conventional pollutants and best conventional technology (BCT) for conventional pollutants.

IV.C.2. Numeric Effluent Limitations[10]

IV.C.2.a. All dischargers implementing active treatment systems are subject to the numeric effluent limitations required in Attachment F.

IV.C.2.b. All dischargers that are Responsible Dischargers for a TMDL with a waste load allocation that was translated into a TMDL-related numeric effluent limitation, are subject to the numeric effluent limitations as indicated by Table H-2 in Attachment H.

10 Refer to Attachment B of this General Permit for the definitions of numeric effluent limitations and numeric effluent limitation exceedances.

IV.C.3. Numeric Action Levels[11]

IV.C.3.a. All dischargers that are Responsible Dischargers for a TMDL with a waste load allocation that was translated into a TMDL-related numeric action level, are subject to the numeric action level as indicated by Table H-2 in Attachment H.

IV.C.3.b. Dischargers with dewatering activities not subject to a separate NPDES permit are subject to the numeric action levels required in Attachment J.

IV.C.3.c. For Risk Level 2 and 3 sites, refer to Attachment D, Section III.G. For Type 2 and 3 linear underground and overhead projects, refer to Attachment E, Section III.G. For stormwater and authorized non-stormwater discharges, the numeric action level for pH is provided as a range where the lower value is 6.5 pH standard units and the upper value is 8.5 pH standard units. The discharger shall report the field reading to two decimal places. A numeric action level exceedance for pH occurs when the reading, obtained per each discharge location per day of each qualifying precipitation event, is below the lower value or above the upper value, as shown in Table 1 of this Section.

IV.C.3.d. Risk Level 2 and 3 sites, refer to Attachment D, Section III.G. For Type 2 and 3 linear underground and overhead projects, refer to Attachment E, Section III.G. For stormwater and authorized non-stormwater discharges the numeric action level for turbidity is 250 Nephelometric Turbidity Units (NTU). An exceedance of the turbidity numeric action level occurs when the field reading, obtained per each discharge location per day of each qualifying event, is over 250 NTU, as shown in Table 1 of this Section.

11 Refer to Attachment B of this General permit for the definitions of numeric action levels and numeric action level exceedances.

Table 1. Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units

Parameter	Test Method	Discharger Type	Method Detection Limit	Units	Numeric Action Level
TMDL-Related Pollutant	U.S. EPA-approved test method for specific pollutant parameter	Responsible Dischargers	Depends on the test method	mg/L	Refer to Table H-2 in Attachment H
pH	Field test with calibrated portable instrument using EPA approved procedures	Risk Level 2 and 3 Risk Type 2 and 3	0.2	pH Units	Lower Value= 6.5 Upper Value= 8.5
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2 and 3 Risk Type 2 and 3	1	NTU	250

IV.D. Receiving Water Limitations

IV.D.1. The discharger shall ensure that stormwater discharges and authorized non-stormwater discharges to any surface or ground water will not adversely affect human health or the environment.

IV.D.2. The discharger shall ensure that stormwater discharges and authorized non-stormwater discharges will not contain pollutants in quantities that threaten to cause pollution or a public nuisance.

IV.D.3. The discharger shall ensure that stormwater discharges and authorized non-stormwater discharges will not contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards contained in an applicable water quality control plan.

IV.D.4. Responsible Dischargers shall comply with the applicable TMDL implementation requirements in Attachment H of this General Permit, including TMDL-specific additional BMPs and site pollutant modeling, numeric action levels, and/or numeric effluent limitations.

IV.E. Linear Underground and Overhead Project Requirements

Dischargers with linear underground and/or overhead projects shall comply with the requirements included in Attachments E, E.1, and E.2 of this General Permit.

IV.F. Risk Level 1 Requirements

Risk Level 1 dischargers shall comply with the requirements included in Attachment D, D.1, and D.2 of this General Permit.

IV.G. Risk Level 2 Requirements

Risk Level 2 dischargers shall comply with the requirements included in Attachment D, D.1, and D.2 of this General Permit.

IV.H. Risk Level 3 Requirements

Risk Level 3 dischargers shall comply with the requirements included in Attachment D, D.1, and D.2 of this General Permit.

IV.I. Active Treatment System Requirements

Dischargers implementing an active treatment system shall comply with all of the requirements in Attachment F of this General Permit.

IV.J. Passive Treatment Requirements

Dischargers implementing passive treatment on-site shall comply with all the requirements in Attachment G of this General Permit.

IV.K. Total Maximum Daily Load Implementation Requirements

IV.K.1. Responsible Dischargers are dischargers who:

a. Discharge stormwater and authorized non-stormwater directly, or through a municipal separate sewer system or other conveyance, to impaired water bodies or watersheds identified in a U.S. EPA approved total maximum daily load (TMDL) with a waste load allocation assigned to construction stormwater sources; and

b. Have one or more TMDL-specific pollutant sources present on-site with the potential to enter construction stormwater discharge, which are required to be identified in the pollutant source assessment (refer to Section IV.O.2.i below).

IV.K.2. Responsible Dischargers shall comply with the applicable requirements in Attachment H of this General Permit.

IV.L. Discharges Subject to the California Ocean Plan

IV.L.1. Discharges to Ocean Waters

IV.L.1.a. Dischargers that discharge directly into ocean waters that are subject to the model monitoring provisions of the California Ocean Plan shall be deemed in compliance with applicable California Ocean Plan model monitoring provisions when in compliance with monitoring requirements of this General Permit.

IV.L.1.b. The Regional Water Boards may require a discharger that discharges directly into ocean waters who has demonstrated non-compliance with this General Permit's monitoring requirements to develop and implement a monitoring plan in compliance with additional effluent and ocean monitoring provisions established pursuant to Water Code § 13383.

IV.L.2. Discharges Granted an Exception for Areas of Special Biological Significance (ASBS)

IV.L.2.a. Dischargers who were granted an exception to the California Ocean Plan prohibition of discharges of waste directly to an ASBS pursuant to Resolution 2012-0012 amended by Resolution 2012-0031 shall comply with the conditions and requirements set forth in Attachment I of this General Permit. Any discharger that applies for and is granted an exception to the California Ocean Plan prohibition after September 1, 2013, shall comply with the conditions and requirements set forth in the granted exception.

IV.M. Dewatering Requirements

IV.M.1. Dischargers with dewatering activities subject to a separate NPDES permit (e.g., de minimis and low threat discharges) are not subject to comply with the dewatering requirements of this General Permit as found in Attachment J and shall obtain coverage as required by the State or Regional Water Boards.

IV.M.2. Dischargers with dewatering activities not subject to a separate NPDES permit (e.g., de minimis and low threat discharges) shall comply with the dewatering requirements in Attachment J.

IV.N. Post-Construction Requirements

IV.N.1. All dischargers, other than linear underground and overhead project dischargers, shall implement BMPs to reduce runoff and pollutants in stormwater discharges that are reasonably foreseeable after all construction phases have been completed at the site (post-construction BMPs).

IV.N.2. Dischargers subject to the post-construction requirements of an existing NPDES Phase I or Phase II municipal separate storm sewer system permit are not subject to the post-construction requirements in Section IV.N.3 below, and shall submit the following items with their Permit Registration Documents through SMARTS:

a. An attachment or web-source containing the applicable NPDES Phase I or Phase II municipal separate storm sewer system permittee's post-construction requirements; and

b. The post-construction plans and calculations submitted to, or approved by, the applicable NPDES Phase I or Phase II municipal separate storm sewer system permittee. If the discharger submitted preliminary post-construction plans and calculations as a Permit Registration Document, the discharger shall submit the approved plans and calculations within 14 days of approval by the municipal stormwater permittee, through a Change of Information in SMARTS. The discharger shall submit a Change of Information in SMARTS for any revisions to post-construction plans and calculations prior to submitting the Notice of Termination.

IV.N.3. All dischargers, other than linear underground and overhead project dischargers or dischargers subject to the post-construction requirements of an existing NPDES Phase I or Phase II municipal separate storm sewer system permit, shall comply with the following post-construction runoff reduction requirements. The discharger shall comply with this General Permit's post-construction requirements if the Permit Registration Documents were submitted prior to the effective date of applicable post-construction requirements of the corresponding NPDES Phase I or Phase II municipal stormwater permit.

IV.N.4. The discharger shall use non-structural and/or structural measures to replicate the pre-construction water balance (for this General Permit, defined as the volume of rainfall that ends up as runoff) for the smallest storms up to and including the 85th percentile, 24-hour precipitation event (or the smallest precipitation event that generates runoff, whichever is larger).

IV.N.5. For sites with disturbed area exceeding two acres, the discharger shall preserve the pre-construction drainage density (miles of stream length per square mile of drainage area) for all drainage areas within the area serving a first order stream[12] or larger stream and ensure that post-project runoff time of concentration is equal to or greater than pre-project time of concentration.

IV.N.6. The discharger shall certify and submit post-construction plans, calculations, and other supporting documentation as a Permit Registration Document in SMARTS. The discharger shall submit a Change of Information in SMARTS for

12 A first order stream is defined as a stream with no tributaries.

any revisions to post-construction plans and calculations prior to submitting the Notice of Termination.

IV.N.7. Regional Water Board staff may review post-construction plans, calculations, and other supporting documentation to verify that the post-construction water balance is accurate; and may request that the discharger make revisions if necessary.

IV.N.8. The discharger may use the contact information found online or in Attachment C to request Regional Water Board staff review post-construction plans, calculations, and other supporting documentation prior to and during construction.

IV.O. Stormwater Pollution Prevention Plan Requirements

IV.O.1. The discharger shall ensure the site's SWPPP complies with the below conditions:

a. A site-specific SWPPP is developed, and amended as necessary, by a QSD. The discharger is responsible for keeping the SWPPP and associated documents updated in SMARTS to reflect current site conditions and construction activities.

b. Trained personnel and BMP materials are available at the site as required by this General Permit.

c. The SWPPP includes the implementation of BMPs that comply with BAT, BCT, and ensure compliance with water quality standards; additional BMPs based on input from the QSP to address numeric action level and numeric effluent limitation exceedances; and additional training needed for the QSP, Legally Responsible Person, or designated persons on-site.

d. The SWPPP is available at the site and made available upon request by a federal, State, or municipal inspector. A current copy of the site-specific SWPPP and any site inspection reports required by this General Permit may be kept in electronic format at the site so long as the information requested by a federal, State, or municipal inspector can be made available during an inspection. All maps are legible and available in hard copy at the site.

IV.O.2. The SWPPP shall include:

a. Identification of all pollutants, their sources, and control mechanisms, including sources of sediment associated with all construction activities (e.g., sediment, paint, cement, stucco, cleaners, site erosion);

b. Pollutant source assessments, including a list of potential pollutant sources and identification of site areas where additional BMPs are necessary to reduce or prevent pollutants in stormwater and authorized non-stormwater discharges, per the following minimum requirements when developing the pollutant source assessment:

   i. Consider all potential sources of pollutants, including non-visible pollutants which are known, or should be known to occur on-site including those that:

      1. Are used in construction activities;

      2. Are stored on-site;

      3. Were spilled or released during construction activities or past land use activities and not cleaned up; and

      4. Were applied to land as part of past land use activities.

   ii. Consider all potential sources of pollutants associated with applicable TMDLs listed in Attachment H, and state whether or not sources of those pollutants are present on-site;

   iii. Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant exposed, source handled, produced, stored, recycled, or disposed of on-site;

   iv. Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with stormwater; and

   v. Consider the direct and indirect pathways that pollutants may be exposed to stormwater or authorized non-stormwater discharges. This shall include an assessment of past spills or leaks, non-stormwater discharges, and discharges from adjoining areas.

c. Description of site-specific BMPs implemented to reduce or eliminate stormwater pollution, including the following, if applicable:

   i. Minimum sediment and erosion control BMPs as outlined in Attachments D and E of this General Permit;

   ii. Active treatment systems as included in an Active Treatment System Plan (as required in Section E.1 of Attachment F);

   iii. Passive treatment technologies as included in a Passive Treatment Plan (as required in Section D.2 of Attachment G);

   iv. BMPs implemented to address applicable TMDL implementation requirements (as required by Attachment H); and

   v. Dewatering systems (as required by Attachment J).

d. Site-specific BMPs initialized immediately to temporarily stabilize an area disturbed by construction where construction activities will not be resumed within 14 days;

e. Identification, elimination, control, or treatment information for all non-stormwater discharges from the site not regulated by this or another NPDES permit;

f. Description of efforts and BMPs used to minimize and control pollutants discharged from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be captured and properly disposed of and/or treated to mitigate impacts to water quality;

g. Description of efforts and BMPs used to minimize exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater;

h. Description of spill and leak prevention and response plan including:

    i. Procedures that effectively address hazardous and non-hazardous spills in accordance with law;

    ii. Spill and leak response equipment and materials to be available on-site, cleaned up immediately, and disposed of properly; and

    iii. Personnel are assigned and trained for spill and leak prevention and response.

i. Construction Site Monitoring Program that describes methods and procedures for monitoring discharges in accordance with the applicable Attachment D or E that includes the following:

    i. Visual inspection locations, inspection procedures, and follow-up tracking procedures.

    ii. Applicable sampling locations, collection, and handling procedures shall include detailed procedures for field analysis, sample collection, storage, preservation, and shipping to the laboratory to ensure consistent quality assurance and control is maintained.

    iii. A copy of the Chain of Custody form used when handling and shipping samples.

    iv. Identification of the analytical methods and related method detection limits (if applicable) for each parameter.

    v. Watershed Monitoring Option:

        1. If the discharger is part of a qualified regional watershed-based monitoring program approved by the Regional Water Board Executive Officer or their delegate, the discharger may be eligible for relief from the monitoring requirements in the applicable

Attachment D or E. The Regional Water Board may approve proposals to substitute a qualified watershed-based monitoring program if it determines the program will provide information to determine each discharger's compliance with the requirements of this General Permit.

j. Title Sheet(s) with:
   i. Project name;
   ii. Project location (vicinity map);
   iii. Preliminary schedule of activities;
   iv. Site operating hours (hours when construction activities are occurring);
   v. Index of attachments;
   vi. Contact information for QSD(s), QSP(s), and trained delegates (name, phone numbers, license or certification number); and
   vii. Signature of the QSD(s) who prepared the SWPPP.

k. Pre-Earthwork Drawing with:
   i. Site and project boundaries;
   ii. Areas disturbed during geotechnical or other preconstruction investigation work;
   iii. Existing roads and trails;
   iv. Drainage areas;
   v. Discharge locations;
   vi. Existing storm drain system if applicable; and
   vii. Proposed locations of storage areas for waste, construction materials, project staging areas, stockpiles, vehicles, equipment and vehicle maintenance, loading/unloading of materials, site access (entrance/exits), fueling, water storage, water transfer for dust control, demolition, and areas of other construction support activities.

l. Construction and Earthwork Drawing(s) with:
   i. Site layout (grading plans) including roads;
   ii. Site and project boundaries;
   iii. Drainage areas;
   iv. Discharge locations;
   v. Sampling locations;
   vi. Areas of soil disturbance (temporary or permanent);
   vii. Proposed active areas of soil disturbance (cut or fill);

vii. Proposed locations of erosion control BMPs;

ix. Proposed locations of sediment control BMPs;

x. Proposed locations of run-off BMPs;

xi. Temporary and/or permanent run-on conveyance (if applicable);

xii. Proposed locations of active treatment systems(s) (if applicable);

xiii. Locations of storage areas for waste, construction materials, project staging areas, stockpiles, vehicles, equipment and vehicle maintenance, loading/unloading of materials, site access (entrance/exits), fueling, water storage, water transfer for dust control, demolition, and areas of other construction support activities; and

xiv. Site-specific procedures to implement final stabilization BMPs as soon as reasonably practicable.

IV.P. Annual Reporting Requirements

IV.P.1. The discharger shall electronically certify and submit an Annual Report through SMARTS by September 1st for the previous reporting period from July 1st through June 30th if a WDID number is active for at least 90 days within the reporting period.

IV.P.2. The discharger shall retain an electronic copy or hard copy of each Annual Report for a minimum of three years after the date the Annual Report is certified.

IV.P.3. The Annual Report shall consist of the following:

a. The summary of all stormwater sampling and monitoring reports and supporting documents (e.g., laboratory reports);

b. The summary of all corrective actions taken during the compliance year;

c. The identification and explanation of any compliance activities (e.g., missed sampling or visual inspections) or corrective actions that were not implemented;

d. The summary of all the General Permit violations;

e. The names of individual(s) who performed the site inspections, sampling, visual inspections, and/or measurements;

f. The date, place, time of site inspections, sampling, visual inspections, and/or measurements, including the amount of precipitation measured in inches; and

g. All visual inspection and sample collection exception records and reports.

V. SITE ROLES AND PERSONNEL

V.A. Discharger Responsibilities

V.A.1. The discharger, as defined in Attachment B, is responsible for all site activity affiliated with General Permit compliance and non-compliance including work done by QSDs, QSPs, and QSP delegates.

V.A.2. The discharger shall ensure that the SWPPP and any required amendments are developed by a QSD. SWPPP changes or amendments shall be uploaded through SMARTS within 30 calendar days.

V.A.3. The discharger shall ensure that all persons responsible for implementing this General Permit's requirements for a project shall be appropriately licensed or certified in accordance with this General Permit. For example, the discharger shall verify personnel serving as QSD(s) or QSP(s) have an active and current certificate, and engineering and/or geology work performed for the site is conducted by a California licensed professional.

V.A.4. The discharger shall ensure that the correct construction start and end date are:

a. Used for each regulated construction project's risk determination;

b. Listed in SMARTS; and

c. Included on the unique WDID number notification form in a site location viewable by the public or readily available upon request if unable to post publicly.

V.A.5. The discharger shall ensure project data and contact information is current in SMARTS.

V.A.6. If a Legally Responsible Person changes, the discharger shall update the contact information for the Legally Responsible Person in SMARTS.

V.B. Legally Responsible Person

V.B.1. When the discharger is required to sign, certify, and electronically submit any documents required by the General Permit, the State or Regional Water Board, or U.S. EPA, the signatory for the discharger is the Legally Responsible Person and must meet the definition of "Legally Responsible Person" set forth in Attachment B.

V.B.2. The Legally Responsible Person may designate a Duly Authorized Representative, as defined in Attachment B, who may sign, certify, and electronically submit any documents, reports, or information required by this General Permit, the State or Regional Water Boards, or U.S. EPA. The Legally Responsible Person shall update the designation in SMARTS if there are any changes to the Duly Authorized Representative.

V.B.3. The Legally Responsible Person and, if applicable, Duly Authorized Representative shall comply with the electronic signature and certification

requirements set forth in Section VI.H when submitting information required by the General Permit.

V.C. Discharger's Responsibilities for Qualified SWPPP Developer Performance

V.C.1. The discharger shall retain a QSD from the beginning of the project through the Notice of Termination approval.

V.C.2. A QSD is required to assess how construction activities will affect sediment transport, erosion, and other discharges of pollutants in stormwater runoff in the SWPPP design and implementation. The QSD is required to revise the SWPPP to address potential problems identified by visual inspections, sampling data, comments from a QSP, or their own site observations.

V.C.3. A QSD is required to include in the SWPPP the name, email, and phone number of all the QSP-trained delegate(s).

V.C.4. The discharger shall ensure that a QSD performs the following on-site visual inspections[13]:

a. Within 30 days of construction activities commencing on a site;

b. Within 30 days of a discharger replacing the QSD;

c. Twice annually, once August through October and once January through March;

d. Within 14 calendar days after a numeric action level exceedance; and

e. Within the time period requested in writing from Water Board staff.

V.C.5. A QSD may perform the work of a QSP.

V.D. Discharger's Responsibilities for Qualified SWPPP Practitioner Performance

V.D.1. The discharger shall ensure that a QSP reviews work performed by trained delegates including visual inspections, sampling, BMP implementation activities, and other required tasks listed in the SWPPP.

V.D.2. The discharger shall ensure that a QSP performs the following on-site visual inspections[14]:

a. Once every calendar month;

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13 These on-site visual inspection requirements are the minimum required and may be increased by the discharger or a QSD during times of high-risk construction activities, excessive site problems, or other conditions that warrant increased oversight by a QSD.

14 These on-site visual inspection requirements are the minimum requirements and may be increased by the discharger or a QSD during times of high-risk construction

b. Within 72 hours prior to a forecasted Qualifying Precipitation Event to inspect areas of concern to verify the status of any deficiencies, BMPs, or other identified issues at the site. If extended forecast precipitation data (greater than 72 hours) is available from the National Weather Service, the pre-precipitation event inspection may be done up to 120 hours in advance;

c. Within 14 days after a numeric action level exceedance the QSP shall visually inspect the drainage area of exceedance and document any areas of concern; and

d. Prior to the submittal of General Permit Notice of Termination or Change of Information (for acreage changes) of all or part of a site.

V.D.3. The discharger shall ensure that a QSP verifies the following:

a. All BMPs required in the SWPPP are implemented, correctly installed, inspected, and maintained;

b. Track out of construction related material at site entrances and exits is controlled;

c. The SMARTS generated WDID number notification form is in a site location viewable by the public or readily available upon request, kept up to date, and the start and end dates are correct and match the dates listed in SMARTS for the project;

d. Sampling protocols for stormwater and non-stormwater discharges are correctly performed as described in the SWPPP by on-site trained personnel delegated by a QSP (including, but not limited to, taking representative samples of the runoff);

e. Contact information including, name, phone number, and email address for the discharger, Legally Responsible Person, QSD(s), and QSP(s) is correct and updated in SMARTS within 90 days of a change); and

f. Photo documentation of problem areas of erosion, new sediment deposition, unauthorized non-stormwater discharges, and/or failed BMPs is included in the SWPPP and are made available upon a regulatory inspector's request.

V.E. Discharger Responsibilities for Delegates' Performance

V.E.1. The discharger may authorize a QSP to delegate visual inspections, sampling, and/or SWPPP and BMP implementation activities to others (delegates) (e.g., superintendent, project manager, foreman, contractor, coworker) that have received training for their respective tasks. A QSP opting to delegate tasks to

activities, excessive site problems, or other conditions that warrant increased oversight of the site.

others shall provide the following training based on the guidelines set by the Construction General Permit Training Team:

a. Foundational training for all delegates regarding stormwater compliance roles and responsibilities, forecast information, and documentation and reporting procedures; and

b. Site-specific training regarding visual inspections, sampling procedures, and/or SWPPP and BMP implementation activities relevant to the delegate's assigned responsibilities.

V.E.2. The discharger shall ensure the following for QSP-delegate(s):

a. A QSP has determined the delegate(s) can perform and have a competent understanding of the visual inspection, sampling, and/or SWPPP and BMP implementation tasks prior to fully delegating the responsibility to the individual;

b. The current delegate(s), including name, email, and phone number, are maintained in a training log, uploaded as an attachment to the SWPPP in SMARTS, prior to the delegate performing the delegated function; and

c. The delegate(s) have a system used to record and report issues back to the QSP within 24 hours of when a corrective action is needed.

V.E.3. The delegate cannot perform the QSD and QSP inspections required in Section V.C.4 or Section V.D.2, respectively.

V.F. Becoming a Qualified SWPPP Developer (QSD) or Qualified SWPPP Practitioner (QSP)

V.F.1. All QSDs and QSPs shall have fundamental knowledge of erosion and sedimentation processes, best management practices, and their implementation to control pollutants in stormwater discharges.

V.F.2. California licensed professional engineers or geologists may self-certify their eligibility to serve as a QSD/QSP via the State Water Board Construction Stormwater Program website.

V.F.2.a. Consistent with Title 16, California Code of Regulations, § 475 Code of Professional Conduct, a California Board for Professional Engineers, Land Surveyors, and Geologists (CBPELSG) licensee shall provide service for a project in a manner that is consistent with the laws, codes, ordinances, and regulations applicable to that project. A CBPELSG licensee shall not misrepresent their scope of authority affiliated with their professional license.

V.F.2.b. The State Water Board expects that a CBPELSG licensee serving a discharger enrolled in this General Permit has thorough knowledge of the conditions and requirements of this General Permit and the required supporting documents and information.

V.F.3. A person can obtain a QSD or QSP certification through the CASQA by completing the following steps:

Step 1: Complete a required prerequisite to take the QSD or QSP training course;

Step 2: Complete the QSD or QSP training course;

Step 3: Pass the QSD or QSP exam; and

Step 4: Register as a QSD or QSP though the CASQA website.

V.F.4. A QSD applicant shall currently possess at least one of the following prerequisites:

a. A California landscape architect registration;

b. A professional hydrologist registration through the American Institute of Hydrology;

c. A Certified Professional in Erosion and Sediment Control (CPESC)™ registration through EnviroCert International, Inc.;

d. A Certified Professional in Stormwater Quality (CPSWQ)™ registration through EnviroCert International, Inc.; or

e. Any prerequisite course approved by the State Water Board's Division of Water Quality Deputy Director in accordance with Section V.G.

V.F.5. A QSP applicant shall currently possess at least one of the following prerequisites:

a. A Certified Erosion, Sediment, and Stormwater Inspector (CESSWI) registered through Enviro Cert International, Inc.;

b. A certified inspector of sediment and erosion control registered through Certified Inspector of Sediment and Erosion Control (CISEC) Inc.;

c. A Construction Management degree from an accredited 4-year institution that includes coursework that covers the underlying principles of erosion and sediment control and practices of reducing pollution in stormwater; or

d. Any prerequisite course approved by the State Water Board's Division of Water Quality Deputy Director in accordance with Section V.H.

V.F.6. To remain in good standing with their certification, QSDs and QSPs registered through CASQA shall:

a. Complete 6 hours, annually, of continuing education on site assessment techniques, best management practice design and implementation, inspection techniques, or monitoring approaches. This requirement can be fulfilled in whole or in part by continuing education taken to maintain any of the approved underlying prerequisites; and

b. Complete the online QSD or QSP renewal process every two years, including a review of materials addressing permit implementation updates, clarifications, and experiences as provided by the Construction General Permit Training Team.

V.G. Pre-existing QSP and QSD qualification

V.G.1. A QSD or QSP who maintained a valid certification as of the effective date of this General Permit shall remain in good standing.

V.G.1.a. Existing QSDs and QSPs certified through CASQA shall, prior to the expiration date of their current certificate, certify that they have maintained a valid underlying certification and complete the recertification review or refresher training through CASQA's renewal process.

V.G.1.b. Existing QSD/QSPs who have self-certified with the State Water Board that they are a California licensed professional engineer or California licensed professional geologist shall complete the recertification process through the State Water Board Construction Stormwater Program website and complete self-directed training required by the State Water Board before September 1, 2024.

V.H. QSP and QSD Prerequisite Course Qualification

V.H.1. The State Water Board's Division of Water Quality Deputy Director may approve the qualification of additional prerequisite courses for QSD and QSP certification.

V.H.2. Individuals may recommend additional prerequisite courses by emailing the Stormwater Help Desk (stormwater@waterboards.ca.gov). The course curriculum shall meet an acceptable level of training and require continuing education to maintain their certification.

V.H.3. The Construction General Permit Training Team will review any recommended prerequisite courses and provide feedback for the State Water Board Division of Water Quality Deputy Director's consideration. If approved, the course will be listed on the State Water Board's Construction Stormwater Program website (https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html) as an approved prerequisite course.

V.I. Water Board Rescission of a QSP or QSD Certification

V.I.1. The State Water Board Executive Director or a Regional Water Board Executive Officer may:

a. Suspend any QSD or QSP certification and require that additional training be completed as a condition of re-instatement if the Executive Director or Executive Officer finds, in writing, that the QSD or QSP in the course of acting as a QSD or QSP at one or more site(s) lacked adequate knowledge or training to perform duties required by the General Permit; and/or

b. Rescind any QSD or QSP certification if, after providing notice and an opportunity to be heard, the Executive Director or Executive Officer finds, in writing, that the QSD or QSP has in the course of acting as a QSD or QSP at one or more site(s), (1) willfully or negligently caused or allowed a violation of this General Permit; (2) submitted false or misleading information to the State Water Board or any Regional Water Board, (3) used fraud or deception; or (4) failed to use reasonable care and good judgment.

V.I.2. An individual whose QSD or QSP certification has been rescinded may request the State Water Board to review the rescission. Any request for review must be received by the State Water Board no later than 30 days after the date that the individual received written notice of the rescission.

VI. STANDARD PROVISIONS

VI.A. Duty to Comply

VI.A.1. The discharger shall comply with all General Permit conditions and requirements. Any General Permit non-compliance constitutes a violation of the Clean Water Act and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal of General Permit coverage.

VI.A.2. The discharger shall comply with effluent standards or prohibitions established under Clean Water Act § 307(a) for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions.

VI.B. Need to Halt or Reduce Activity Not a Defense

A discharger's claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this General Permit shall not be a defense in an enforcement action.

VI.C. Duty to Mitigate

The discharger shall take all responsible steps to minimize or prevent any discharge that has a reasonable likelihood of adversely affecting human health or the environment in violation of this General Permit, which includes ceasing discharge as necessary.

VI.D. Proper Operation and Maintenance

VI.D.1. The discharger shall at all times properly install, operate, and maintain any treatment and control facilities, systems, related appurtenances, and backup or auxiliary systems (treatment control systems) which are installed or used by the discharger to achieve compliance with this General Permit's conditions.

VI.D.2. The discharger shall include adequate laboratory controls and appropriate quality assurance procedures for all treatment control systems.

VI.E. Property Rights

This General Permit does not: (1) convey any property rights of any sort or any exclusive privileges, (2) authorize any injury to private property or any invasion of personal rights, (3) or authorize any infringement of federal, state, or local laws or regulations.

VI.F. Duty to Maintain Records and Provide Information

VI.F.1. The discharger shall maintain a paper or electronic copy of all required records and reports, including but not limited to, a copy of this General Permit and all its attachments and Fact Sheet, for three years from the date generated or date submitted whichever is later.

VI.F.2. The discharger shall furnish the Water Boards or U.S. EPA, within a reasonable time, any requested information to determine compliance with this General Permit. The discharger shall also furnish, upon request, copies of records that are required to be kept by this General Permit.

VI.G. Inspection and Entry

VI.G.1. The discharger shall allow staff of the Water Boards, U.S. EPA, and/or an authorized representative of the municipal separate storm sewer system receiving the discharge to:

a. Enter the site premises during a regulated construction activity and/or at the location where compliance records are maintained in accordance with this General Permit;

b. Access and copy any compliance records maintained in accordance with this General Permit;

c. Inspect the complete project and site, including any off-site staging areas or material storage areas, and the erosion/sediment controls;

d. Sample, monitor, or install automated sampling equipment to ensure General Permit monitoring compliance; and

e. Conduct bioassessment monitoring (if required by a Regional Board water quality control plan), receiving water monitoring, and/or evaluate the performance of BMPs.

VI.H. Electronic Signature and Certification Requirements

VI.H.1. All documents submitted to the Water Boards (including, but not limited to, Permit Registration Documents, Annual Reports, monitoring records, and

Notices of Termination) are required to be certified by the Legally Responsible Person[15] or a Duly Authorized Representative[16] through SMARTS.

VI.H.2. All documents (e.g., designs, plans, reports) that require engineering or geologic evaluations and judgments must be prepared by, or under the direction of, appropriately licensed professionals in the State of California. The licensee must sign and provide their registration number or stamp on the documents to be submitted and certified by the Legally Responsible Person or Duly Authorized Representative.

VI.H.3. Any person signing documents under Section VI.H shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I am also aware that my user ID and password constitute my electronic signature and any information I indicate I am electronically certifying contains my signature. I understand that my electronic signature is the legal equivalent of my handwritten signature. My signature on this form certifies that my electronic signature is for my own use, that I will keep it confidential, and that I will not delegate or share it with any other person. Should I wish to delegate such authority, I will do so formally in writing and electronically notify the State Water Board using SMARTS of such delegation within 10 days of the delegation. I further certify that I will protect my electronic signature from unauthorized use, and that I will contact the State Water Board, within two business days of discovery, if I suspect that my electronic signature has been lost, stolen, or otherwise compromised."

VI.H.4. Clean Water Act § 309(c)(4) provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or non-compliance shall upon conviction, be penalized with a monetary fine of up to $10,000 or by imprisonment for not more than two years, or both.

15 Defined in this General Permit, Attachment B (Glossary)

16 Defined in this General Permit, Attachment B (Glossary)

VI.I. Anticipated Noncompliance

The discharger shall provide advance notice, in writing, to the applicable Regional Water Board and local stormwater management agency of any planned changes in site construction activities that may result in non-compliance with this General Permit.

VI.J. Reporting of Contaminated Soils

The discharger shall have soils sampled and tested to ensure proper handling and public safety measures are implemented when soil contamination is found or suspected, and a responsible party is not identified, or the responsible party fails to promptly take the appropriate action. The discharger shall notify the appropriate local, state (including the Regional Water Board), and federal agency(ies) when contaminated soil is found at a site.

VI.K. Bypass

VI.K.1. Bypass[17] is prohibited unless the discharger demonstrates one or more of the following conditions:

a. In accordance with the bypass requirements for active treatment systems in Attachment F; or

b. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage[18]; or

c. There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated waste, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that could occur during normal periods of equipment downtime or preventative maintenance; or

d. The discharger allowed a bypass to occur that does not cause the exceedance of an effluent limitation(s), due to essential maintenance to assure efficient operation. In such a case, the above bypass conditions are not applicable; and

17 The intentional diversion of waste streams from any portion of a treatment facility or system.

18 Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

e. The discharger submitted a notice to the Regional Water Board, at least 14 calendar days in advance of the need for a bypass except where advance notice was not possible due to an emergency situation where the bypass was unavoidable to prevent loss of life, personal injury or severe property damage. If the discharger was unable to notify the Regional Water Board in advance of a bypass the discharger shall submit written notification to the Regional Water Board within 14 days after the bypass occurs.

VI.L. Upset

VI.L.1. To establish an affirmative defense of an upset,[19] a discharger must demonstrate the following through properly signed, contemporaneous operating logs or other relevant evidence:

a. The non-compliance discharge location;

b. The cause(s) of the upset;

c. The treatment facility was properly operated and maintained at the time of the upset;

d. The discharger submitted notice of the upset as required; and

e. Any required remedial measures were implemented as soon as feasibly possible.

VI.L.2. An administrative determination made before an action of noncompliance occurs is not a final administrative action subject to review.

VI.L.3. In an enforcement proceeding, the discharger seeking to establish the occurrence of an upset has the burden of proof.

VI.M. Oil and Hazardous Substance Liability

This General Permit, or parts of this General Permit (including, but not limited to, the findings, requirements, conditions, and provisions) shall not be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Clean Water Act § 311.

19 An exceptional incident in which there is unintentional and temporary non-compliance with technology-based numeric effluent limitations because of factors beyond the reasonable control of the discharger. An upset event does not include a large precipitation event, wind event, or other natural weather-related force of nature. An upset does not include non-compliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

VI.N. Severability

The provisions of this General Permit are severable; if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this General Permit, shall not be affected thereby.

VI.O. Reopener Clause

VI.O.1. This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of U.S. EPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations §§ 122.62, 122.63, 122.64, and 124.5.

VI.O.2. The submittal of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, notification of planned changes, or anticipated non-compliance does not annul any General Permit condition.

VI.O.3 This General Permit shall be modified or revoked and reissued to conform if any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) promulgated under Clean Water Act §307(a) for a toxic pollutant which is present in the discharge and the standard or prohibition is more stringent than any pollutant limitation in this General Permit. The Water Boards shall provide the public and dischargers notice of the action.

VI.O.4 This General Permit may be reopened before March 23, 2032 to revise the requirements implementing the Los Angeles and Long Beach Harbor Waters TMDL for copper, lead, and zinc, for dischargers that discharge to the Dominguez Channel or the Torrance Lateral Channel. State Water Board staff will work with interested stakeholders to develop a plan to collect additional data related to the forthcoming implementation of the 100 mg/L TSS numeric effluent limitation, including the soil screening investigation, and report to the State Water Board via the Executive Director report no later than September 1, 2024. The State Water Board will evaluate whether the additional data and other available information warrants revising the requirements implementing the Los Angeles and Long Beach Harbor Waters TMDL for copper, lead, and zinc at a publicly noticed Board meeting no later than August 31, 2028.

VI.O.5 This General Permit may be reopened to revise the requirements implementing the Los Angeles Lakes TMDL for chlordane, DDT, dieldrin, and PCBs that discharge to Peck Road Park Lake, Echo Park Lake or Puddingstone Reservoir. State Water Board staff will work with interested stakeholders to develop a plan to collect additional data related to the implementation of the 100 mg/L TSS numeric effluent limitation, including the soil screening investigation, and report to the State Water Board via the Executive Director report no later than September 1, 2023. Upon completion of the work required by the plan, the State Water Board will evaluate whether the additional data and other available

information warrants revising the requirements implementing the Los Angeles Lakes TMDL for chlordane, DDT, dieldrin, and PCBs at a publicly noticed Board meeting.

VI.P. Penalties for Violations of General Permit Conditions

VI.P.1. Clean Water Act § 309 provides significant penalties for any person who violates a permit condition implementing Clean Water Action §§ 301, 302, 306, 307, 308, 318, or 405 or any permit condition or limitation implementing any such section in a permit issued under § 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed $37,500[20] per calendar day of such violation, as well as any other appropriate sanction provided by §309 of the Clean Water Act.

VI.P.2. Clean Water Act § 309(c)(4) provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained by this General Permit, including reports of compliance or non-compliance shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years or both.

VI.P.3. The Porter-Cologne Water Quality Control Act provides specific administrative, civil, and criminal penalties, which in some cases are greater than those under the Clean Water Act.

VI.Q. Water Quality Based Corrective Actions[21]

VI.Q.1. By the end of each reporting year, if the discharger's construction stormwater and/or non-stormwater discharges contain pollutants that are in violation of Receiving Water Limitations (Section IV.D) or in the event that a Responsible Discharger's discharge exceeds an applicable numeric effluent limitation in Attachment H, the discharger shall:

a. Conduct a site assessment to identify pollutant source(s) within the site that are associated with construction activity and whether the BMPs described in the SWPPP have been properly implemented;

b. Evaluate the site's SWPPP and its implementation to determine whether additional BMPs or SWPPP implementation measures are necessary to reduce or prevent pollutants in all regulated discharges to comply with the Receiving Water Limitations (Section IV.D) or applicable numeric effluent limitations in Attachment H; and

20 May be further adjusted in accordance with the Federal Civil Penalties Inflation Adjustment Act.

21 Terms including, but not limited to, Responsible Dischargers, numeric effluent limitations and exceedances are defined in Attachment B of this General Permit.

c. Certify and submit, through SMARTS, documentation based upon the above site assessment and SWPPP evaluation that:

i. Additional BMPs and/or SWPPP implementation measures have been identified and included in the SWPPP to comply with the Receiving Water Limitations (Section IV.D) or applicable numeric effluent limitations in Attachment H; or

ii. No additional BMPs or SWPPP implementation measures are required to reduce or prevent pollutants in all regulated discharges to comply with the Receiving Water Limitations (Section IV.D) or applicable numeric effluent limitations in Attachment H.

VI.Q.2. The Regional Water Board or its delegate may require revisions of the discharger's water quality-based corrective actions and/or request additional supporting documentation.

VI.R. Continuation of Expired General Permit

This General Permit continues in force and effect until the effective date of a new General Permit adopted the State Water Board or the State Water Board rescinds this General Permit.

VII. REGIONAL WATER BOARD AUTHORITIES

VII.A. Regional Water Boards (as defined in Attachment B) may terminate General Permit coverage upon determination that a discharger has failed to comply with General Permit requirements. The Regional Water Boards may also terminate General Permit coverage upon determination that the subject discharges must be regulated through a separate Regional Water Board-issued NPDES permit.

VII.B. Regional Water Boards may require a discharger to comply with additional monitoring and reporting requirements, including but not limited to, increasing sampling frequency, requiring analysis of additional parameters, increasing the frequency of inspections by the Qualified SWPPP Developer and Qualified SWPPP Practitioner, or implementation of recommendations by the Qualified SWPPP Developer and Qualified SWPPP Practitioner, pursuant to California Water Code § 13383.

VII.C. All Regional Water Board actions that modify requirements for compliance, pursuant to California Water Code §13383, with this General Permit shall be provided to the discharger in writing and submitted through SMARTS.

VII.D. Regional Water Boards may require dischargers to retain records required by this General Permit for more than the three years.

VII.E. Regional Water Boards may obtain site-specific data, records, or documentation demonstrating one or more numeric action level exceedances occurred at a site and may direct the discharger to revise their SWPPP and/or BMPs to address the exceedance.

VII.F. Consistent with California Water Code §§13350(a) and/or 13376, Regional Water Boards finding a discharger in violation of a prohibition or requirement in this General Permit with the potential to discharge pollutants into the waters of the United States, may require a discharger to revise and re-submit the SWPPP, other required documents and/or implement additional BMPs to address site-specific conditions.

VII.G. Consistent with 40 Code of Federal Regulations §§ 122.26(a)(9)(i)(D) and 122.26(a)(9)(i)(C), a Regional Water Board may require any discharge of stormwater and non-stormwater from construction activity that is not regulated by this General Permit, and that may cause or contribute to an exceedance of a water quality standard, to obtain General Permit coverage.

VII.H. A Regional Water Board has the authority to require a Risk Level determination to be reassessed for a site currently regulated under this General Permit, or with an active waiver, as deemed necessary, including but not limited to the following circumstances:

1. The discharger has a demonstrated history of General Permit non-compliance with this General Permit or its predecessors;
2. The subject construction site poses a significant risk of causing or contributing to an exceedance of a water quality standard without the implementation of the additional Risk Level 2 or 3 requirements; or
3. The Regional Water Board staff have documented that the discharger Risk Level for the subject site is calculated incorrectly.

FACT SHEET

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

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I. BACKGROUND

I.A. History

The Federal Water Pollution Control Act (also referred to as the Clean Water Act (CWA)) was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge complies with a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 amendments to the Clean Water Act added § 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program. The United States Environmental Protection Agency (U.S. EPA) published final regulations on November 16, 1990, establishing stormwater permit application requirements for specified categories of industries. The regulations provide that discharges of stormwater to waters of the United States from construction projects that encompass five or more acres of soil disturbance are effectively prohibited unless the discharge complies with a NPDES permit. Regulations (Phase II Rule) that became final on December 8, 1999, lowered the permitting threshold from five acres to one acre.

The State Water Resources Control Board (State Water Board) has elected to adopt only one statewide general permit at this time that will apply to most stormwater discharges associated with construction and land disturbance activity, although federal regulations allow two permitting options for stormwater discharges (individual permits and general permits).

The State Water Board reissued the Construction General Permit for Stormwater Discharges on September 2, 2009 (Water Quality Order 2009-0009-DWQ). The State Water Board adopted Order 2010-0014-DWQ on November 16, 2010, to clarify the signatory requirements. The State Water Board adopted Order 2012-0006-DWQ on July 17, 2012, to remove numeric effluent limitations outside of the use of active treatment systems. Water Quality Order 2009-0009-DWQ and the subsequent amendments are collectively referred to as the previous permit.

The General Permit accompanying this Fact Sheet regulates stormwater runoff from construction sites. Regulating many stormwater discharges under one general permit greatly reduces the administrative burden associated with permitting individual stormwater discharges. To obtain coverage under this General Permit, dischargers shall electronically certify and submit the Permit Registration Documents, which includes a Notice of Intent, Stormwater Pollution Prevention Plan (SWPPP), and other compliance related documents required by this General Permit and submit the appropriate permit fee to the State Water Board. The Regional Water Quality Control Boards (Regional Water Boards) may issue general permits or individual permits containing more specific provisions as the stormwater program develops and if this occurs, this General Permit will no longer regulate those dischargers.

I.B. Legal Challenges and Court Decisions

I.B.1. Early Court Decisions

The U.S. EPA promulgated regulations exempting most stormwater discharges from the NPDES permit requirements shortly after the passage of the Clean Water Act. (See 40 Code of Federal Regulations § 125.4 (1975); *see also Natural Resources Defense Council v. Costle* (D.C. Cir. 1977) 568 F.2d 1369, 1372 (Costle); *Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F.3d 1159, 1163 (Defenders of Wildlife).) The District of Columbia Court of Appeals invalidated the regulation, holding that the U.S. EPA "does not have authority to exempt categories of point sources from the permit requirements of [CWA] § 402." (*Costle*, 568 F.2d at 1377) when environmental groups challenged this exemption in federal court. The *Costle* court rejected the U.S. EPA argument that effluent-based storm sewer regulation was administratively infeasible because of the variable nature of stormwater pollution and the number of affected storm sewers throughout the country. (*Id*. at 1377-82.) Although the court acknowledged the practical problems relating to storm sewer regulation, the court found the U.S. EPA had the flexibility under the Clean Water Act to design regulations that would overcome these problems. *(Id*. at 1379-83.) In particular, the court pointed to general permits and permits based on requiring best management practices (BMPs).

During the next 15 years, the U.S. EPA made numerous attempts to reconcile the statutory requirement of point source regulation with the practical problem of regulating possibly millions of diverse point source discharges of stormwater. (See *Defenders of Wildlife*, 191 F.3d at 1163; see also Gallagher, Clean Water Act in Environmental Law Handbook (Sullivan, edit., 2003) p. 300 (Environmental Law Handbook); Eisen, Toward a Sustainable Urbanism: Lessons from Federal Regulation of Urban Stormwater Runoff (1995) 48 Wash. U.J. Urb. & Contemp. L.1, 40-41 [Regulation of Urban Stormwater Runoff].)

Congress amended the Clean Water Act in 1987 to require NPDES permits for stormwater discharges. (See Clean Water Act § 402(p), 33 USC § 1342(p); *Defenders of Wildlife*, 191 F.3d at 1163; *Natural Resources Defense Council v. U.S. EPA* (9th Cir. 1992) 966 F.2d 1292, 1296.) Congress distinguished between industrial and municipal stormwater discharges in these amendments enacted as part of the Water Quality Act of 1987. Congress provided that NPDES permits regarding industrial stormwater discharges "shall meet all applicable provisions of this section and section 1311 [requiring the U.S. EPA to establish effluent limitations under specific timetables]." (CWA § 402(p)(3)(A), 33 USC § 1342(p)(3)(A); see also Defenders of Wildlife, 191 F.3d at 1163-64.)

U.S. EPA adopted regulations in 1990 specifying the activities that were considered to be "industrial" and thus required discharges of stormwater associated with those activities to obtain coverage under NPDES permits. (55 Fed. Reg. 47,990 (1990); 40 Code of Federal Regulations § 122.26(b)(14).)

Construction activities were originally deemed a subset of the industrial category. (40 Code of Federal Regulations § 122.26(b)(14)(x).) In 1999, U.S. EPA issued regulations for "Phase II" of stormwater regulation, which required most small construction sites (1-5 acres) to be regulated under the NPDES program. (64 Fed. Reg. 68,722; 40 Code of Federal Regulations § 122.26(b)(15)(i).)

I.B.2. Court Decisions on Public Participation

Two federal court opinions have vacated U.S. EPA's rules that denied meaningful public review of NPDES permit conditions. The Ninth Circuit Court of Appeals on January 14, 2003, held that certain aspects of U.S. EPA's Phase II regulations governing MS4s were invalid primarily because the general permit did not contain express requirements for public participation. (Environmental Defense Center v. U.S. EPA (9th Cir. 2003) 344 F.3d 832.) Specifically, the court determined that applications for general permit coverage (including the Notice of Intent and Stormwater Management Program) must be made available to the public, the applications must be reviewed and determined to meet the applicable standard by the permitting authority before coverage commences, and there must be a process to accommodate public hearings. (Id. at 852-54.) Similarly, the Second Circuit Court of Appeals on February 28, 2005, held that the U.S. EPA's confined animal feeding operation rule violated the Clean Water Act because it allowed dischargers to write their own nutrient management plans without public review. (Waterkeeper Alliance v. U.S. EPA (2d Cir. 2005) 399 F.3d 486.) Although neither decision involved the issuance of construction stormwater permits, this General Permit addresses the courts' rulings where feasible.[1]

The Clean Water Act and the U.S. EPA regulations provide states with the discretion to formulate permit terms, including specifying best management practices (BMPs), to achieve strict compliance with federal technology-based and water quality-based standards. (*Natural Resources Defense Council v. U.S. EPA* (9th Cir. 1992) 966 F.2d 1292, 1308.) Accordingly, this General Permit has developed specific BMPs, numeric action levels, and Total Maximum Daily Load (TMDL)-derived numeric action level and numeric effluent limitations in order to

1 In *Texas Independent Producers and Royalty Owners Assn. v. U.S. EPA* (7th Cir. 2005) 410 F.3d 964, the Seventh Circuit Court of Appeals held that the U.S. EPA's Construction General Permit was not required to provide the public with the opportunity for a public hearing on the Notice of Intent or Stormwater Pollution Prevention Plan. The Seventh Circuit briefly discussed why it agreed with the Ninth Circuit's dissent in Environmental Defense Center, but generally did not discuss the substantive holdings in Environmental Defense Center and Waterkeeper Alliance, because neither court addressed the initial question of whether the plaintiffs had standing to challenge the permits at issue. However, notwithstanding the Seventh Circuit's decision, it is not binding or controlling on the State Water Board because California is located within the Ninth Circuit.

achieve these minimum federal standards. In addition, the General Permit requires a SWPPP to be developed following specified standards and measures in this General Permit for implementation. This General Permit ensures that the dischargers do not "write their own permits" through discharger-requirements to implement specific BMPs, numeric action levels, and numeric effluent limitations, and SWPPP performance standards and information. As a result, this General Permit does not require each discharger's SWPPP to be reviewed and approved by the Regional Water Boards.

I.B.3. U.S. EPA Construction and Development Effluent Limitations Guidelines and New Source Performance Standards[2]

The U.S. EPA promulgated Effluent Limitation Guidelines and New Source Performance Standards on December 1, 2009, to control the discharge of pollutants from construction sites (See 74 Fed. Reg. 62996, and 40 Code of Federal Regulations § 450.21.). These requirements, known as the "Construction and Development Rule" became effective on February 1, 2010. Following the promulgation of the Construction and Development Rule in 2009, several parties filed petitions for review of the final rule, identifying potential deficiencies with the dataset that the U.S. EPA used to support its decision to adopt a numeric turbidity limitation as well as other issues. The U.S. EPA finalized amendments to the Construction and Development Rule on March 6, 2014, resulting in the removal of the numeric turbidity limitation and monitoring requirements and clarifying changes in the U.S. EPA's 2017 and 2022 NPDES General Permit for Discharges from Construction Activity (Construction General Permit) (See 79 Fed. Reg. 12661 and 80 Fed. Reg. 25235) pursuant to a settlement agreement to resolve the litigation. The U.S. EPA 2022 Construction General Permit was adopted and went into effect on February 17, 2022.

a. Summary of Construction and Development Rule Requirements

The Construction and Development Rule requirements include effluent limitations that apply to all permitted discharges from construction sites (40 Code of Federal Regulations § 450.21) for six general categories: i.) Erosion and Sediment Controls, ii.) Soil Stabilization Requirements, iii.) Dewatering, iv.) Pollution Prevention Measures, v.) Prohibited Discharges, and vi.) Surface Outlets. The effluent limitations are structured to require construction operators to first, prevent the discharge of sediment and other pollutants using effective planning and erosion control measures; and second, control discharges that do occur using effective sediment control measures. Dischargers are required to implement a range of pollution control and prevention measures to limit or

2 U.S. EPA, Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions (June 2014), <https://www.epa.gov/sites/production/files/2018-10/documents/protection-downstream-wqs-faqs.pdf> [as of May 20, 2021]

prevent discharges of pollutants, including those from stormwater and non-stormwater discharges. The narrative effluent limitations are designed to prevent or minimize exposure and mobilization of pollutants in stormwater discharge from: (1) sediment and sediment-bound pollutants such as metals and nutrients, (2) construction materials, debris, and other sources of pollutants on construction sites, dissolved construction pollutants, such as nutrients, organics, pesticides, herbicides, and metals, (4) natural pollutants present in construction site soil, such as arsenic or selenium, and (5) previous activities on the site such as agriculture or industrial activity. Source control through minimization of soil erosion is the most effective way of controlling the discharge of these pollutants because, once mobilized by rainfall and stormwater, pollutants can detach from the soil particles and become dissolved pollutants which are not removed by down-slope sediment controls.

b. Incorporation of Construction and Development Rule into this General Permit

This General Permit incorporates the necessary requirements to implement the 2014 Construction and Development Rule amendments. Information on how this General Permit incorporates the Construction and Development Rule is included below.

i. Erosion and Sediment Controls

This General Permit requires dischargers to design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants through the development and implementation of a site-specific SWPPP and BMPs. The discharger's SWPPP is required to include the site-specific measures implemented to control all construction activity-related pollutants through temporary and permanent erosion and sediment control BMPs (Order, Section IV.O and Attachments D and E). Dischargers are required to implement channel protection and post construction controls to match the pre-construction hydrograph to ensure the minimization of project impacts to downstream channels and streambanks due to erosion and scour, temperature, and loss of ecological services (Attachments D and E). Dischargers are required to set back their construction activities from streams and wetlands unless infeasible to reduce the risk of impacting water quality (e.g., natural stream stability and habitat function). Although this General Permit does not mandate specific setbacks, these distances may be required as part of California Environmental Quality Act (CEQA) or the National Environmental Policy Act (NEPA), the Regional Water Board, municipal requirements, and/or other agencies such as the Department of Fish and Wildlife. The risk calculation and runoff reduction mechanisms in this General Permit are expected to facilitate compliance with any Regional Water Board, local resource agency, and/or California Environmental Quality Act (CEQA) or the National Environmental Policy Act (NEPA). The

U.S. EPA has provided requirements for determining buffer size.[3] These requirements may provide helpful guidance for sizing construction sites buffers to limit the disturbance of creeks and natural drainage features. Attachments D and E require the discharger to minimize soil compaction when feasible in site areas where final vegetation will occur, or infiltration features will be installed. Dischargers are required to preserve native topsoil on-site when feasible, unless the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. This General Permit encourages dischargers to keep the clearing and grading of native vegetation at the site at a minimum where areas are needed to build the project and to allow fire protection access. An example of an alternative practice to grading is mowing vegetation and leaving the subgrade root structure and soil intact. A guidance document[4] was developed in 2016 providing techniques to address the challenges with site stabilization and climate change. Dischargers are encouraged to:

1) Plan upfront for site stabilization to occur in months with more moisture to lower the need of imported water to stabilize vegetation;
2) Minimize the disturbance of soil to decrease the length of time and cost of final site stabilization;
3) Maintain the soil health to control stormwater pollution and erosion through open pore soil structures which support long-term sustainable vegetative cover;[5] and
4) Apply proper stockpiling practices to preserve soil biota and the native seed bank which reduces the need for fertilizer, seed, and water.[6]

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3 U.S. EPA, 2022. Construction General Permit, Appendix F – Buffer Requirements (2022). https://www.epa.gov/system/files/documents/2022-01/2022-cgp-final-appendix-f-buffer-reqs.pdf [as of July 19, 2022]

4 Construction General Permit (CGP) Training Team, CGP Review Issue #3 for QSD and QSP Registration and Renewal, Insights for Better Stabilization (2016), <https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/training/cgp_review_issue3.pdf> [as of May 20, 2021]

5 Caltrans, Erosion Control Toolbox <https://dot.ca.gov/programs/design/lap-erosion-control-design/tool-1-lap-erosion-control-toolbox> [as of May 20, 2021]

6 The American Association of State Highway Officials, Construction Practices for Environmental Stewardship Website, 2019. The American Association of State Highways Officials (AASHTO) includes best practices on stockpiling, including Section 4.11.1 on specific guidelines for preserving stockpiles in its online Environmental Stewardship Practices in Construction and Maintenance Compendium. AASHTO

ii. Soil Stabilization Requirements

This General Permit requires dischargers to implement soil stabilization BMPs whenever disturbance activities occur (e.g., clearing, grading, excavating, or other earth disturbing activities). Alternative stabilization measures must be employed as specified by Section III.H of this Order and Attachments D and E of this General Permit in arid, semiarid, and drought-stricken areas where initiating immediate vegetative stabilization measures is infeasible. Stabilization must be completed within a time period determined by the Regional Water Boards. Stabilization may not be required if the intended function of a specific area of the site necessitates that it remains disturbed in limited circumstances.

iii. Dewatering

This General Permit requires dischargers to implement BMPs to control the volume and velocity of dewatering discharges in Section IV.M of the Order. Dischargers are required to minimize the discharge of pollutants from dewatering trenches and excavations through the implementation of BMPs. Dischargers with dewatering activities subject to a separate NPDES, de minimis, or low threat discharger permit for dewatering activities are to obtain coverage through those permits issued by the State or Regional Water Board.

iv. Pollution Prevention Measures

Section IV.O of this Order requires that dischargers design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. The SWPPP requirements include the minimization of exposure of pollutants and discharge of pollutants from certain activities included in the Effluent Limitation Guidelines. This General Permit also incorporates specific TMDL requirements for construction stormwater sources to limit loading to impaired waterbodies.

v. Prohibited Discharges

This General Permit authorizes only stormwater and authorized non-stormwater discharges associated with construction activity when in compliance with all General Permit requirements, provisions, limitations, and prohibitions. Section IV.B of this Order prohibits discharges from the following categories:

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recommends stockpiling for up to 6 months, but no longer than a year, and a maximum stockpile height of 4 feet. <https://environment.transportation.org/wp-content/uploads/2021/04/25-254_FR.pdf> [as of April 28, 2022]

1) Dischargers out of compliance with any applicable discharge prohibitions contained in applicable Basin Plans or statewide water quality control plans;
2) Discharges to Areas of Special Biological Significance (ASBS), unless granted an exception issued by the State Water Board;
3) All discharges to waters of the United States except for the stormwater and non-stormwater discharges specifically authorized by this General Permit or in a separate NPDES permit;
4) Debris and trash resulting from construction activities;
5) Wastewater from washout or clean out of areas, structures or equipment with concrete, grout, stucco, paint or other construction materials;
6) Form-release oils and curing compounds;
7) Fuels, oils, fluids, or other materials used in vehicle and equipment operation and maintenance;
8) Soaps, solvents, or detergents used in vehicle and equipment washing or external building wash-down; and
9) Toxic or hazardous substances from a spill or other release (e.g., asbestos, lead, mercury, or polychlorinated biphenyls (PCBs).

vi. Surface Outlets

Attachment J of the General Permit authorizes specific construction dewatering discharges and requires the dewatering activity to utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible.

I.C. Healthy Soils and Recycled Water

I.C.1. Healthy Soils Initiative

The State of California launched the Healthy Soils Initiative in 2015, which is a collaboration of state agencies and departments to promote the stewardship of healthy soils. The California Environmental Protection Agency is a Healthy Soils Initiative partner. The initiative recognizes that healthy soils can increase water retention and infiltration, improve plant health, prevent erosion, reduce sediment and dust, sequester carbon to reduce greenhouse gas emissions, improve water quality, and improve biological diversity and wildlife habitat.[7]

7 California Department of Food and Agriculture, California's Healthy Soils Initiative, <https://www.cdfa.ca.gov/healthysoils/> [as of May 20, 2021]

This General Permit encourages healthy soils practices through requirements in Attachments D and E of this General Permit, which require dischargers to preserve native topsoil and reduce compaction of soils. Using healthy soils practices will encourage vegetative growth, increase soil stabilization, and conserve water on construction sites.

I.C.2. Recycled Water Use

The State Water Board adopted the Water Quality Control Policy for Recycled Water (Recycled Water Policy) and the Staff Report with Substitute Environmental Documentation on December 11, 2018 and became effective on April 8, 2019. The Recycled Water Policy states, "When used in compliance with this Policy, California Code of Regulations, title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to fresh water or potable water for such approved uses."[8]

This General Permit encourages the use of recycled water for appropriate application on construction sites, including irrigation of vegetation and dust control when used in compliance with the Recycled Water Policy, California Code of Regulations, title 22 and all applicable state and federal water quality laws.

I.D. Blue Ribbon Panel of Experts (Panel)

I.D.1. Introduction

The State Water Board convened an expert panel (panel) in 2005 and 2006 to address the feasibility of numeric effluent limitations in California's stormwater permits. Specifically, the panel was asked to address the following:

Is it technically feasible to establish numeric effluent limitations, or some other quantifiable limit, for inclusion in stormwater permits? How would such limitations or criteria be established, and what information and data would be required?[9]

8 State Water Resources Control Board, Water Quality Control Policy for Recycled Water (December 11, 2018), <https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2018/121118_7_final_amendment_oal.pdf> [as of April 28, 2022]

9 Storm Water Panel, The Feasibility of Numeric Effluent Limits to Discharges of Storm Water Associated with Municipal, Industrial, and Construction Activities (June 19, 2006), <https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/numeric/swpanel_final_report.pdf> [as of May 20, 2021]

I.D.2. The Panel observations:

- "Limited field studies indicate that traditional erosion and sediment controls are highly variable in performance, resulting in highly variable turbidity levels in the site discharge."
- "Site-to-site variability in runoff turbidity from undeveloped sites can also be quite large in many areas of California, particularly in more arid regions with less natural vegetative cover and steep slopes."
- "Active treatment technologies involving the use of polymers with relatively large storage systems now exist that can provide much more consistent and very low discharge turbidity. However, these technologies have to date only been applied to larger construction sites, generally five acres or greater. Furthermore, toxicity has been observed at some locations, although at the vast majority of sites, toxicity has not occurred. There is also the potential for an accidental large release of such chemicals with their use."
- "To date most of the construction permits have focused on TSS and turbidity, but have not addressed other, potentially significant pollutants such as phosphorus and an assortment of chemicals used at construction sites."
- "Currently, there is no required training or certification program for contractors, preparers of soil erosion and sediment control Stormwater Pollution Prevention Plans, or field inspectors."
- "The quality of stormwater discharges from construction sites that effectively employ BMPs likely varies due to site conditions such as climate, soil, and topography."
- "The States of Oregon and Washington have recently adopted similar concepts to the Action Levels described earlier."

I.D.3. Panel Conclusions:

- "It is the consensus of the panel that active treatment technologies make Numeric Limits technically feasible for pollutants commonly associated with stormwater discharges from construction sites (e.g., TSS and turbidity) for larger construction sites. Technical practicalities and cost-effectiveness may make these technologies less feasible for smaller sites, including small drainages within a larger site, as these technologies have seen limited use at small construction sites. If chemical addition is not permitted, then Numeric Limits are not likely feasible."
- "The Board should consider Numeric Limits or Action Levels for other pollutants of relevance to construction sites, but in particular pH. It is of particular concern where fresh concrete or wash water from cement mixers/equipment is exposed to stormwater."

- "The Board should consider the phased implementation of Numeric Limits and Action Levels, commensurate with the capacity of the dischargers and support industry to respond."

I.D.4. The State Water Board Considerations:

The State Water Board carefully considered the findings of the Panel and related public comments in the development and adoption of the previous permit. The State Water Board also reviewed and considered the comments regarding statewide stormwater policy during the adoption of the Industrial General Permit. From the input received, the State Water Board identified some General Permit and program performance gaps that were addressed in the previous permit and were also adopted in this General Permit. The Summary of Significant Changes (below) in this General Permit align with the Panel's process and findings, and build onto the previous permit.

I.E. Summary of Significant Changes in This General Permit

I.E.1. Significant Changes:

a. Implementation of Total Maximum Daily Loads (TMDL)

TMDLs are regulatory tools providing the maximum amount of a pollutant from potential sources in the watershed that a water body can receive while attaining water quality standards. A TMDL is defined as the sum of the allowable loads of a single pollutant from all contributing point sources (waste load allocations) and non-point sources (load allocations), plus the contribution from background sources. (40 Code of Federal Regulations § 130.2, subd. (i).)

Discharges covered by this General Permit are considered to be point source discharges, and therefore must comply with effluent limitations that are "consistent with the assumptions and requirements of any available waste load allocation for the discharge prepared by the State and approved by U.S. EPA pursuant to 40 Code of Federal Regulations section 130.7." (40 Code of Federal Regulations § 122.44, subd. (d)(1)(vii).) In addition, Water Code § 13263, subdivision (a), requires that waste discharge requirements implement relevant water quality control plans. Many TMDLs in existing water quality control plans include both waste load allocation and implementation requirements.

Attachment H of this General Permit lists the watersheds with U.S. EPA-approved and U.S. EPA-established TMDLs that include TMDL requirements for discharges covered by this General Permit.

i. Where waste load allocations are expressed at a value that is too low for laboratory methods listed in 40 Code of Federal Regulations Part 136 to detect and for pollutants that are sediment-bound, the Water Board has developed a soil screening investigation and total suspended solids numeric

effluent limitation for sediment-bound pollutants, presented in Attachment H Section I.G.5, to determine compliance.

b. Implementation of Statewide Trash Policy Requirements

The State Water Board adopted an amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Resolution 2015-0019) in 2015. This Resolution establishes the statewide water quality objective and implementation plan to control trash.

This General Permit implements this Resolution by prohibiting the discharge of any debris and/or trash from construction sites.

c. Removal of Bioassessment Monitoring

The Bioassessment requirements in the previous permit were initially developed to align with a proposed State Water Board biological integrity policy, which is still under development.

The Bioassessment requirements in the previous permit were reviewed by State Water Board staff and it was determined the requirements were not consistently implemented and data was not generated. These requirements did not generate sufficient data regarding corresponding improvements to water quality or watershed heath that would justify the cost of compliance.

The Bioassessment requirements were removed from this General Permit and replaced with acknowledgement to use the Risk Level 3 and linear underground and overhead project Type 3 sites annual fee surcharge to perform monitoring, sampling, and/or bioassessment monitoring through the Surface Water Ambient Monitoring Program (SWAMP) to determine the impacts of large, high-risk construction projects on water quality and watershed health. Future reissuances of this General Permit may include bioassessment or biological integrity requirements to implement specific water quality control plans or state policy for water quality control.

d. Passive Treatment Technologies

State Water Board staff collaborated with stakeholders and other Water Board staff to discuss the use of passive treatment chemicals and technologies throughout the life of the previous permit, and it was determined that many passive treatment chemical types are potentially toxic to fish and other aquatic organisms. Staff also considered and reviewed regulations regarding these

technologies from U.S. EPA and several other jurisdictions.[10,11,12] Cationic polyacrylamide-based flocculant products are acutely toxic to aquatic species in small quantities and are neurotoxins. Other flocculant products such as anionic polyacrylamide-based flocculants are chronically toxic to aquatic species in large quantities.

Staff additionally identified low-turbidity discharges from passive treatment chemical application sites do not always correspond to low levels of solids in the discharge and/or an improvement in water quality downstream because:

i. Turbidity monitoring solely measures small size solids suspended in the water; turbidity monitoring does not measure particle size, weight, or bed load of sediment from flocculated solids leaving a site; and

ii. Passive treatment chemicals discharged either by aerial deposition or via stormwater runoff contributes similar level of threat to aquatic life from toxicity.

This General Permit contains passive treatment provisions in Attachment G designed to provide the first set of regulations for construction activities use of passive treatment technologies and to align with the U.S. EPA's Construction General Permit requirements for treatment chemicals.

e. Water Quality Control Plan for Ocean Waters of California (California Ocean Plan)

On March 20, 2012, the State Water Board adopted Resolution 2012-0012 (amended by Resolution 2012-0031) which contained a general exception to the California Ocean Plan for discharges of stormwater and non-point sources. This General Permit requires dischargers who discharge to Areas of Special Biological Significance (ASBS) who have been granted an exception to the California Ocean Plan to comply with requirements in Attachment I.

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10 Toronto and Region Conservation, Anionic Polyacrylamide Application Guide for Urban Construction in Ontario (June 2013), <https://sustainabletechnologies.ca/app/uploads/2013/02/Polymer-Guide-Final_NewFormat.pdf> [as of May 20, 2021]

11 State of Washington Department of Ecology, Emerging Stormwater Treatment Technologies (TAPE) (2018), <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies> [as of May 20, 2021]

12 U.S. EPA, Support Document for the Third Six-Year Review of Drinking Water Regulations for Acrylamide and Epichlorohydrin (December 2016), <https://www.epa.gov/sites/production/files/2016-12/documents/810r16019.pdf> [as of May 20, 2021]

f. Sufficiently Sensitive Test Methods

U.S. EPA has finalized minor amendments to its Clean Water Act regulations to codify that under the NPDES program, where U.S. EPA has promulgated or otherwise approved analytical methods under 40 Code of Federal Regulations Part 136, or 40 Code of Federal Regulations Chapter I, subchapters N and O, dischargers must use “sufficiently sensitive” analytical test methods. The purpose of the rulemaking was to clarify that NPDES permittees must use U.S. EPA approved analytical methods that are capable of detecting and measuring the pollutants at, or below, the applicable water quality criteria or permit limits.

This General Permit requires the use of sufficiently sensitive methods to meet the requirements of the amended Clean Water Act regulations described above and requires the discharger to ensure all laboratory analyses are sufficiently sensitive and conducted according to test procedures under 40 Code of Federal Regulations Part 136, including the observation of holding times, detection limits, and other measures designed to ensure quality assurance and quality control.

For any calculations required by this General Permit, a value of zero (0) will be assigned for all analytical results less than the minimum level as reported by the laboratory, so long as a sufficiently sensitive method was used (as evidenced by the reported method detection limit and minimum level which is also referred to as the reporting limit).

g. Notice of Non-Applicability

California Water Code § 13399.30 sets forth the authority for the Water Board to provide entities (referring to the person) a process for determining this General Permit does not apply to the entity’s activities through a Notice of Non-Applicability. The addition of the Notice of Non-Applicability provisions in this General Permit addresses the determination process and required information for construction sites situated in areas where stormwater discharges to waters that are not hydrologically connected to waters of the United States.

h. Sampling and Monitoring Requirements

Sampling and Monitoring requirements have changed in this General Permit as follows:

i. The Qualified SWPPP Developer (QSD) and Qualified SWPPP Practitioner (QSP) have additional requirements to visit the site, conduct visual inspections, and assess site conditions;

ii. The QSDs and QSPs are required to do on-site visual inspections at intervals that reflect potential changes to the construction site (e.g., start of construction, replacement of a QSD, twice yearly); and

iii. Samples must be collected during precipitation events with 0.5”[13] or more predicted within a 24-hour period. This is defined as a Qualifying Precipitation Event for sampling and inspection requirements. The stormwater can be water from rain, snow, or any other precipitation. Qualifying Precipitation Events continue on subsequent 24-hour periods that have precipitation of 0.25” or more forecast, and end with two consecutive 24-hour periods with less than 0.25” forecast.

i. Removal of Rain Event Action Plan

The previous permit designed the Rain Event Action Plan (REAP) to provide an on-site inspection checklist for dischargers to implement requirements prior to a precipitation event. This tool has been discussed over the last ten years internally and externally with stakeholders. This General Permit implements more action-based requirements in lieu of the reporting-based strategy embodied by the REAP. This General Permit replaces REAPS with 1) QSD involvement over the life of the project, 2) additional inspections and visual observations, and 3) an increased requirement to document and implement these site corrective actions.

j. Notice of Termination Process

The Notice of Termination requirements have been updated to include additional project-specific termination information to streamline the Regional Water Board review process. Given that the Notice of Terminations should now be submitted with the complete details to determine approval, this General Permit includes an automatic approval provision after 30 days if not otherwise under review or addressed by the Regional Water Board. This change is to expedite Notice of Termination approval and to reduce the risk of prolonged financial burdens on dischargers for continued on-site monitoring and annual fee payments.

k. Appendices 2 and 2.1 Post Construction Water Balance Calculator

The previous permit included post-construction performance standards requirements and information in Appendices 2 and 2.1. These specific appendices have been removed from this General Permit because these requirements and information are now in Stormwater Applications and Reports Tracking System (SMARTS) and are available for review through the public SMARTS portal. Additionally, Appendix 2 had requirements for post-construction maps contours. This requirement has been removed in this General Permit because this General Permit includes additional SWPPP map requirements and Notice of Termination map requirements. After adoption of

13 Xie, W., et. al. (2016). Models for Estimating Daily Rainfall Erosivity in China. Journal of Hydrology v. 535, p. 527-558.

this General Permit, the State Water Board may hold public or focused stakeholder meetings to discuss any necessary updates or changes to the post-construction water balance calculator in SMARTS. Some of this information will also be incorporated into online web-based maps, calculators, and/or visualizations as implementation guidance to the regulated community.

I.F. Cost Considerations

I.F.1. Passive Treatment Technology Provisions

The passive treatment technologies (passive treatment) requirements in this General Permit provide a regulatory pathway for dischargers to treat runoff for excess sediment without the use of an active treatment system while protecting water quality. The new passive treatment provisions were added due to requests from the regulated community, regulatory staff, and other stakeholders. The major components of the new Passive Treatment provisions that have expected cost components are: 1) consultant or discharger hours to develop and implement the Passive Treatment Plan, and 2) hours for Qualified SWPPP Developer (QSD) to implement the Passive Treatment Plan and monitor passive treatment application and use.

a. Hours for consultants and/or dischargers to develop and implement the Passive Treatment Plan.

   The passive treatment technologies in Attachment G requires the development of the Passive Treatment Plan. The costs associated with development and execution of the Passive Treatment Plan are in labor hours, training, collection of manufacturer information and potential hazards to the environment, and research on site-specific implementation of the Attachment G requirements. These costs, based on an hourly QSD billing rate of $80 to $120, are estimated at $3,000 to $5,000.

b. QSD hours to implement Passive Treatment Plan and monitor site-specific passive treatment application and use, including post-event sampling.

   A QSD is needed to develop and implement the Passive Treatment Plan and will require office and field hours for that individual. This is often a contracting cost to a consultant from the discharger or payment of QSD-staff hours for the discharger’s organization. This cost will be highly variable, depending on the amount and duration of exposed soil conditions and the number of precipitation events that produce discharge from a site. The range is therefore estimated at $2,500 to $6,500 per year for the QSD and $500 to $1,250 in laboratory analysis costs.

I.F.2. Training

The reissuance of this General Permit requires updates to the QSD and QSP training program first introduced in the previous permit. Additional and revised

training for all parties implementing this General Permit have been identified since 2009 and incorporated into this reissuance. Specific training needs to include: 1) Qualified SWPPP Developers (QSDs) and Qualified SWPPP Practitioners (QSPs) revised roles on the site, 2) training for passive treatment and TMDL implementation, and 3) statewide re-test and/or re-certification of Qualified SWPPP Developers, Qualified SWPPP Practitioners, and Trainers of Record.

a. QSD and QSP revised site roles

The Order and Attachments D and E require more involvement by the QSD and QSP, which is a potential increase in cost to the discharger as these are often contracted positions. Additional duties for the QSD under this permit include required field inspections and post-storm monitoring of passive treatment systems. On average, these duties should require 5 to 7 additional field days per year, at an estimated cost of $4,000 to $6,000, and up to two additional office days per year, at an estimated cost of $1,600. The revised roles for the QSP are expected to result in discharger savings, particularly since the increased QSD inspections may reduce QSP field time.

b. Additional training needed for passive treatment and TMDL implementation.

QSD and QSP personnel will need additional training to come up to speed on the new provisions of this General Permit. New requirements such as passive treatment and TMDL implementation will extend training content and create a learning curve for QSDs and QSPs trained under the previous permit. A four-hour refresher-level course would provide adequate additional training on these subjects, at an estimated cost of $200 to $250 for the training and $150 to $225 for the employee’s time.

c. Potential statewide re-test and re-certification

If the Construction General Permit Training Team determines that all QSD/QSPs need to be re-tested or somehow re-certify their knowledge, this could incur costs to the state as well as to the dischargers for time spent. Assuming that any such re-testing and re-certification would be an online process, the additional cost would amount to two or three hours of employee time, or up to $125.

I.F.3. Cost Variability

The State Water Board recognizes that there is high variability in cost across all construction projects. Cost variability relates to many factors including: 1) short term vs. long term projects, 2) risk level of the project, and 3) construction season/schedule. Below is a discussion of these variables and their impact on overall cost for implementation of the General Permit.

a. Short-term vs. long-term projects

Costs associated with the Construction General Permit are already variable due to the ephemeral nature of construction projects and the variation in size and site conditions. Short-term projects that can be completed during dry periods will incur minimal or no additional costs between permits, with expenditures still proportional to size. Projects that span one or more wet periods with more difficult erosion and sediment control issues, or sites that are in a TMDL watershed, will likely have more costs. This can be mostly attributed to increased QSD oversight and additional sampling and analysis requirements.

b. Risk dependent

The project risk calculation creates great variability in BMP cost, ranging from as little as 0.5 percent of the project total for Risk Level 1 site to four percent of the project total for Risk Level 3 sites. Higher risk sites will have more costs associated with BMPs, potential use of passive treatment, active treatment, increased monitoring requirements, and costs associated with discharging to high-risk receiving waters.

c. Construction activity season and schedule

The General Permit implementation costs are minimized for construction projects that use scheduling as a primary BMP and that schedule construction outside of time periods with likely precipitation events. The requirement for advanced BMPs is reduced, including cost associated with treatment (passive or active) if there is no water on-site. Sampling and analysis costs will be non-existent if no discharge occurs.

I.F.4. Savings

This General Permit includes several cost saving areas. After the previous permit, the State Water Board analyzed the provisions that were clear and enforceable, resulted in valuable data collection, and improved water quality. Changes were made to the previous permit to address areas that were not providing valuable data or improving water quality, including: 1) removal of the Rain Event Action Plan (REAP), 2) revised monitoring and sampling frequency, 3) clarifying the allowance of an inactive project status, 4) improved efficiency for reporting and data collection in SMARTS, 5) programmatic permitting for linear underground and overhead projects, and 6) including a 30-day automatic Notice of Termination approval unless notified by the Regional Water Board that the Notice of Termination is denied, returned, or accepted for review.

a. Rain Event Action Plan removal

The development and implementation of the Rain Event Action Plan in the previous permit resulted in minimal data and un-documented improvements in water quality. The removal of this requirement will save the discharger time and

money, estimated at $2,500 to $3,500 per year in report preparation and $350 to $500 for labor.

b. Revised monitoring frequency

This General Permit includes a revised monitoring frequency that aligns with real-time site conditions and focuses on the implementation of BMPs and inspections. These requirements still ensure representative sampling and monitoring are conducted and includes BMP evaluations after numeric action level exceedances. For a one-year project duration, the savings are estimated at $1,750 to $2,000.

c. Inactive project status

Cost savings for sites to reduce monitoring and inspections during periods of inactivity. The savings come from fewer SWPPP implementation and monitoring hours for consultants and site personnel.

d. Annual Report, SMARTS, and implementation tools

The Annual Report is being redesigned to reduce the number of additional uploads and completion time for the discharger. When feasible, screens will be enhanced to streamline system use and staff is working on implementation tools outside of SMARTS (e.g., web-based maps).

e. Programmatic permitting for linear underground and overhead projects

Allowing linear underground and overhead projects to certify and submit one Notice of Intent for projects that have similar construction activity scopes and are located within one Regional Water Board office boundary will save time and money in application processes, changes of information, and initial inspections.

I.G. Incorporation of Total Maximum Daily Load (TMDL) Requirements and Cost

I.G.1. Introduction

This General Permit's TMDL requirements provide a consistent implementation approach for TMDLs with similar pollutants and waste load allocations, streamlining the process for construction projects to achieve compliance. Responsible Dischargers are required to implement applicable TMDL waste load allocations through the following TMDL-specific requirements developed for this General Permit: compliance with this General Permit, Revised Universal Soil Loss Equation, Version 2, (RUSLE2) modeling, numeric action levels, and/or numeric effluent limitations. This consistency between TMDLs provides cost-efficient implementation for Responsible Dischargers in achieving compliance with applicable TMDL requirements. The discussion below is to provide:

a. An overview of TMDL implementation where the State Water Board has provided cost-efficiencies;

b. General information on TMDL pollutant categories and estimated compliance costs associated with TMDL requirements for Responsible Dischargers;

c. Examples of appropriate existing BMPs; and

d. General costs (high, medium, low) for potential TMDL-pollutant BMP categories.

I.G.2. Using this General Permit's Implementation Framework

Costs are site-specific and vary depending on multiple factors described categorically in Section I.F.3 above. This general information is provided to frame the cost considerations for Responsible Dischargers implementing applicable TMDL waste load allocation requirements. The incorporation of TMDL requirements into this General Permit allows for the use of its monitoring and reporting framework to avoid, where possible to meet the TMDL requirements, incurring additional costs associated with TMDL implementation (e.g., additional and separate reports for numeric action level and numeric effluent limitation exceedances, unique monitoring and sampling requirements specific to TMDLs).

a. The TMDL implementation requirements in this General Permit rely on Responsible Dischargers to complete a thorough pollutant source assessment for the entire duration of their construction project, which shall be included within their SWPPP. Only Responsible Dischargers that identify on-site sources of pollutants associated with an applicable TMDL, as listed in Attachment H, are required to comply with additional TMDL requirements. This provision takes into consideration construction site pollutant source variability and reduces the implementation burden to implement TMDL requirements for pollutants that are not present on their site from construction activities. The additional cost for a TMDL-level pollutant source assessment is estimated at $1,000 to $1,250, including additional field time and SWPPP preparation. Dischargers complying with the alternative approach described in Section I.W.6.g.vi of this Fact Sheet may incur additional costs related to the soil screening required as part of the pollutant source assessment. The soil screening cost is estimated at $200 per sample.

b. Twenty-nine (29) of the TMDL waste load allocations have been translated to require compliance with this General Permit, without imposing additional RUSLE2 modeling, numeric action levels, or numeric effluent limitations.

c. Ninety-three (93) TMDL waste load allocations were translated to require using RUSLE2 modeling to demonstrate a construction site's annual soil loss will not deliver more sediment to a water body than pre-construction conditions. This translation was derived in consideration of costs for TMDLs with mass-based waste load allocations, rather than imposing TMDL-specific monitoring requirements for pollutants that are associated with sediment discharges.

d. Sixty-two (62) of the TMDL waste load allocations have been translated to require numeric action levels, to consistently implement the General Permit's framework using numeric action levels compliance and reporting. Responsible Dischargers are required to follow the same stormwater management requirements for both TMDL-related and non-TMDL-related numeric action level exceedances in this General Permit. TMDLs with concentration-based waste load allocations to be met in receiving waters, are translated into numeric action levels to be met at the construction site discharge location(s), to avoid costly and often infeasible receiving water monitoring.

e. Twenty-one (21) TMDL waste load allocations have been translated to impose numeric effluent limitations for pollutants, with required assessments and monitoring consistent with the regulatory framework of this General Permit. However, Responsible Dischargers will follow the water quality based corrective action process in this General Permit and perform the required actions for TMDL-related numeric effluent limitation exceedances instead of a numeric effluent limitation violation report required for non-TMDL numeric effluent limitations. A Responsible Discharger that exceeds a TMDL-related numeric effluent limitation is in violation of this General Permit and may be subject to mandatory minimum penalties, whereas numeric action level exceedances are not violations of this General Permit. Only applicable TMDLs with concentration-based waste load allocations, to be met at the construction site discharge location(s), were translated into numeric effluent limitations.

I.G.3. TMDL-related Numeric Action Level and Numeric Effluent Limitation Exceedances

The incorporation of TMDL implementation requirements may represent an increase in the cost of compliance for certain Responsible Dischargers. The following conditions must occur for a Responsible Discharger to exceed an applicable TMDL-related numeric action level or numeric effluent limitation:

Condition 1: The discharger discharges stormwater and authorized non-stormwater, either directly or through a municipal separate sewer system or other conveyance, to impaired water bodies or watersheds identified in a U.S. EPA-approved TMDL that assigns a concentration-based waste load allocation to construction stormwater discharges. Concentration-based waste load allocations are translated into numeric effluent limitations or numeric action levels and are listed in Attachment H, Table H-2.

Condition 2: The discharger identifies through the site-specific pollutant source assessment that one or more TMDL-specific pollutants are present at the site with the potential to enter discharge.

If the above conditions occur, the discharger is considered a Responsible Discharger for a TMDL, and subject to TMDL-related numeric action levels or numeric effluent limitations.

Condition 3: The Responsible Discharger triggers the non-visible sampling requirements for the TMDL-specific pollutant when the pollutants may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

If the spill or leak, or BMP breach, failure or malfunction are immediately cleaned up and BMPs to control the pollutant were implemented, maintained, or replaced prior to the discharge, the Responsible Discharger is not required to sample its discharge.

Condition 4: The discharger conducts non-visible sampling in accordance with Attachment D, Section III.D.3, and Attachment E, Section III.D.3 and the analytical results report a concentration for the TMDL-specific pollutant above the applicable TMDL-related numeric action level or numeric effluent limitation listed in Attachment H, Table H-2.

Condition 5: Conditions 3 and 4 occur at least twice for any and all discharge locations within the same drainage area, during a given reporting year (July 1 through June 30). Each of the discharger's subsequent analytical results reporting a concentration above the TMDL-related numeric action level or numeric effluent limitation, after the second occurrence, is considered a distinct exceedance.

A Responsible Discharger violates a TMDL-related numeric effluent limitation only after all the above conditions occur. Responsible Dischargers that exceeded a TMDL-related numeric effluent limitation or numeric action level will continue to implement iterative corrective actions and BMP implementation to prevent further exceedances. Dischargers that do not take corrective actions following an exceedance are in violation of this General Permit.

I.G.4. Availability of Implementation Tools

The State Water Board recognizes the need to provide Responsible Dischargers tools and information to navigate the applicability of TMDL requirements, determine the spatial location of the requirements, and provide support for compliance analyses. To reduce the Responsible Discharger's cost of complying with the TMDL requirements, state-developed tools to assist in the implementation of and compliance with the TMDL requirements will be made free and publicly available. These include a TMDL applicability flowchart, a GIS-based TMDL applicability map, and additional implementation guidance and training for potential compliance methods.

I.G.5. TMDL Pollutant Categories

This General Permit implements a number of TMDLs separated into the following seven TMDL pollutant categories:

a. Bacteria

b. Chloride and salts

c. Diazinon

d. Nutrients

e. Sediment

f. Temperature

g. Metals and Toxics

Attachment H, Table H-2 of this General Permit lists all TMDLs applicable to Responsible Dischargers. For each TMDL, Table 2 cross-references one or more of the pollutant categories above.

a. Bacteria[14,15]

Sources of bacteria and other pathogens in watersheds include, but are not limited to, animal excrement (from stormwater infrastructure and animals) and sanitary sewer overflows of human excrement. Major contributors from construction sites may include wild or tamed animals on the premises, waste handling, portable toilets, and contaminants in erodible materials. This Fact Sheet contains supportive information referenced from the bacteria TMDLs that construction stormwater dischargers are not a significant source of bacteria and therefore would meet the waste load allocations.

The bacteria TMDLs in Attachment H require the implementation of existing minimum BMPs to control stormwater exposure to bacteria sources, thus compliance with these TMDLs is not expected to result in significant additional costs.

b. Chloride and Salts[16]

Salts such as boron, calcium chloride (CaCl), magnesium chloride (MgCl), sodium chloride (NaCl), and sulphate can accumulate in soils within the watershed. Three TMDLs in Attachment H identify construction stormwater

14 Los Angeles Regional Water Board, Ballona Creek, Estuary, and Tributary Bacteria TMDL (June 7, 2012), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R12-008_RB_BPA.pdf> [as of May 20, 2021]

15 CASQA, Construction BMP Handbook (January 2015), <https://www.casqa.org/sites/default/files/casqa-handbook-construction/master_hanbook_file_2015_sec.pdf> [as of May 20, 2021] (CASQA Construction BMP Handbook)

16 Los Angeles Regional Water Board, Calleguas Creek Watershed Salts TMDL (October 4, 2007), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2007-016_RB_BPA.pdf> [as of May 20, 2021]

dischargers as potential sources of chloride and salts. For two of the three TMDLs, compliance with this General Permit was sufficient to meet the assigned waste load allocations, thus not imposing any TMDL-specific costs on the Responsible Dischargers. However, the Upper Santa Clara River TMDL for chloride assigned a concentration-based waste load allocation, which was translated into a numeric action level. As a result, Responsible Dischargers for the Upper Santa Clara River Chloride TMDL can expect a medium to low-cost impact.

Responsible Dischargers in the Upper Santa Clara River watershed (Region 4) may be required to conduct non-visible pollutant monitoring to analyze for boron, chloride, sulfate, and total dissolved solids as part of the TMDL implementation requirements. The estimated additional cost of the non-visible pollutant monitoring for the Upper Santa Clara River TMDL would be approximately $200-$400 for sampling and $150-$250 for analysis and SMARTS data entry, per sampled discharge location per event.

c. Diazinon[17]

Diazinon is an organophosphate pesticide that does not sorb to sediment but is instead mobilized through soils by dissolving in water. Stormwater runoff can come into contact with areas where diazinon was applied and transport the pollutant into the watershed. Although diazinon was once used in both agricultural and urban settings, it has since been banned for non-agricultural uses by the California Department of Pesticide Regulations. Because this General Permit requires all dischargers to perform a pollutant source assessment, and diazinon is banned for non-agricultural uses, compliance with the diazinon TMDL requirements is not expected to incur additional costs.

d. Nutrients[18,19]

Nutrients (e.g., ammonia, nitrogen compounds, and phosphorous) can be found in stormwater runoff from construction sites, industrial areas, and urban areas. Sources of nutrients from construction sites may include background

17 San Diego Regional Water Quality Control Board, Chollas Creek Diazinon Total Maximum Daily Load (August 14, 2002) <https://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/chollascreekdiazinon.html> [as of May 20, 2021]

18 United States EPA Region IX, Los Angeles Area Lakes Total Maximum Daily Loads for Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs (March 26, 2012), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Lakes/LALakesTMDLsEntireDocument.pdf> [as of May 20, 2021]

19 CASQA Construction BMP Handbook, p. 1-7.

concentrations, storage and application of fertilizers, and discharges of nutrient-rich sediments. Most of the nutrient TMDLs in Attachment H require that dischargers comply with waste load allocations by meeting the translated numeric action levels or numeric effluent limitations, while one TMDL relies on RUSLE2 modeling. The compliance cost impact for implementation of the nutrient TMDLs is expected to be medium to high since additional BMPs (filter media BMPs for phosphorus and advanced BMPs for nitrogen) and monitoring may be required for controlling the specific nutrient concentrations from construction sites.

The RUSLE2 modeling used to demonstrate compliance with the San Diego Creek and Newport Bay Nutrients TMDL in Region 8 is estimated to add $750 to $1,500 in costs, per project.

If non-visible pollutant monitoring is required, Responsible Dischargers in some watersheds located in Regions 3, 4 and 8 (Central Coast, Los Angeles Basin and Santa Ana), as specified in Attachment H, shall conduct analyses for the TMDL-specific pollutant(s) such as total nitrogen, ammonia, nitrates, nitrites, phosphorous, and orthophosphates. The estimated additional cost of the TMDL monitoring would be approximately $200-$400 for sampling and $200-$400 for analysis and SMARTS data entry, per sampled discharge location per event.

The May 2021 draft of the Construction Stormwater General Permit, issued for public comments, proposed translations of nitrogen-based nutrient waste load allocations into numeric effluent limitations. The translation of the nitrogen-based nutrient waste load allocations was revised to numeric action levels in this General Permit per the following explanation that numeric action levels are consistent with the assumptions and requirements of the waste load allocations.

All applicable TMDLs with nitrogen-based nutrient waste load allocations discuss low flow as the critical condition for the receiving water impairment. Unlike general urban runoff that occurs year-round, construction stormwater discharges only occur as a result of precipitation events; discharges from construction sites do not typically occur during low flow receiving water conditions. A numeric action level is a more appropriate limitation to implement a TMDL primarily concerned with dry weather discharges. Further, each TMDL discusses municipal wastewater treatment plants as a principal source of nutrient loading. Although stormwater is identified as a potential source, the TMDL did not calculate a source-specific waste load allocation and instead used the water quality objective as the waste load allocation for nutrients. Although the TMDLs sets the compliance location at the point of discharge, because of how the waste load allocation was calculated, the waste load allocations are similar to TMDLs where the compliance point is set at the receiving water. As set forth in Section I.D.3, this General Permit translated

concentration-based waste load allocations to be met in receiving waters into numeric action levels.

The State Water Board has very few nitrogen-based nutrient sampling results from construction stormwater because the previous permit did not require sampling for nutrients. However, nutrient data is available from required monitoring in the Industrial Stormwater General Permit. An analysis of all stormwater data from implementation of the Industrial Stormwater General Permit from 2015 – 2021 shows that of collected nutrients samples, approximately 95 percent of nitrate-plus-nitrite samples (as nitrogen), and 92 percent of ammonia samples had concentration results were lower than numeric action levels listed in this General Permit. The average sampling results, 0.68 mg/L for nitrate-plus-nitrite and 2.16 mg/L for ammonia, were below the numeric action levels in the Industrial Stormwater General Permit. Both observed average sampling results are a fraction of the action levels in this General Permit. The sampling results available through the implementation of the statewide Industrial Stormwater General Permit include stormwater discharge data from industrial facilities, such as fertilizer manufacturers, with significant potential sources of nutrients. In contrast, sources of nutrients from construction sites are generally limited to existing legacy concentrations in the sediment from past land uses that involved application of fertilizers, pesticides, and herbicides, and storage facilities that store the chemicals. Accordingly, it is generally expected that construction stormwater discharges will not exceed the waste load allocations and numeric action levels are appropriate.

Numeric action levels are consistent with the TMDLs and protective of water quality. All dischargers are required to implement sediment control BMPs and eliminate or minimize site erosion. If the Discharger exceeds the numeric action level, as set forth in Attachment H, Section I.D.3.e, the discharger must report and respond to a numeric action level exceedances. As described in Attachment D and E, Section III.G, when there is an exceedance of a numeric action level, dischargers must determine the source of the pollutant, implement corrective actions to reduce or prevent further exceedances and implement iterative corrective actions until the discharge is in compliance with the action level. Within 14 calendar days of an exceedance, a QSD and QSP must perform on-site visual inspections and the QSP must document any areas of concern (Order, Section V.C.3 & V.D.4). For example, if the construction activities include the application or storage of fertilizers, pesticides, and herbicides, exposure of those products to stormwater must be prevented or minimized. Corrective actions may also include implementing BMPs that eliminate stormwater discharges, BMPs with filter media, or other sediment control BMPs. The Regional Water Boards may require additional monitoring, reporting, and BMP requirements upon obtaining site-specific information about an exceedance to a numeric action level (Attachment H, Section I.D.3.f). The

State Water Board expects that dischargers can feasibly comply with the nitrogen numeric action levels in this General Permit without the need to implement more advanced BMPs, which as discussed below are not typically possible to install at construction sites.

The most effective BMPs for removal of nitrogen-based nutrients through denitrification, biofiltration, or bioretention are advanced structural treatment BMPs that are used at permanent sites, not temporary construction sites. Denitrification, the process by which nitrates are reduced to gaseous nitrogen by facultative microbes under anaerobic conditions, is often employed at wastewater treatment plants with numeric effluent limitations for ammonia and/or nitrates. Biofiltration BMPs capture and treat stormwater runoff using conditioned soil beds for planting vegetation and establishing microbial communities to filter out pollutants. Denitrifying treatment and bioretention BMPs requires the retention of all the construction site's stormwater. Sites would need adequate space to accommodate the proper sizing and design of such treatment BMPs to effectively remove nutrients. Construction sites often have limited available area, and the larger the site, the more area is needed for treatment BMPs. Construction of permanent BMPs is not typically compatible with construction stormwater management, as site conditions are inherently transient during the term of the construction, and the nutrient removal BMPs would only be needed during land disturbance activities.

Biofiltration basins require established vegetation to efficiently remove nutrients. The vegetation in a biofiltration basin typically needs, at minimum, several growing seasons, (at minimum several months under ideal weather and soil conditions, up through several years under non-supportive growing conditions), for the vegetation to establish itself and provide effective treatment for nutrient removal. Most construction projects are active for a short duration with insufficient time to establish a vegetative biofiltration process that effectively removes nutrients. Although biofiltration is a commonly used post-construction BMP, its utility during construction is limited due to the inability to move biofiltration BMPs; additionally, biofiltration BMPs are designed specifically to treat a defined stormwater discharge quality under specific site conditions. Biofiltration BMPs are expensive, generally costing tens-of-thousands of dollars in addition to the cost of retention of the site's stormwater. Due to the time period needed to design and establish effective treatment, the long-term nature of treatment implementation, and the relative cost, biofiltration BMPs are not well-suited for construction sites that are temporary in nature.

e. Sediment [20]

Excess sediment delivery to stream channels can be a pollutant and is associated with several natural processes as well as anthropogenic sources. Sediment can transport other pollutants that attach to it, including nutrients, trace metals, and organic compounds. Sediment is the primary component of turbidity, the most common sediment water quality analytical parameter used in this General Permit. Anthropogenic construction sources include, but are not limited to, track in and out from earth moving equipment, unpaved access road-related erosion (e.g., construction and maintenance of paved and unpaved roadways), dust, and soil/earth disturbing activities. All Responsible Dischargers are required to comply with the existing requirements of this General Permit, including the turbidity numeric action levels, associated exceedance actions, and the sediment TMDLs incorporated into this General Permit. However, many of the sediment TMDLs will also require additional RUSLE2 modeling to demonstrate compliance with the assigned waste load allocations. Responsible Dischargers for the Los Peñasquitos Lagoon Sediment TMDL are required to submit an estimate of the representative flow rate from their construction site for one precipitation event, each reporting period. Although imposing these additional requirements is expected to result in a low to medium cost impact for Dischargers, they were considered a more cost-effective approach than other means of complying with the TMDL such as TMDL-specific monitoring.

The cost of a runoff flow rate assessment varies by methodology and the method is often determined by the availability of input data. A relatively simple equation such as the Rational Method would require an hour or less for a QSD to calculate. The more complex and accurate National Resources Conservation Service method may require a site visit or extensive internet research and take two to six hours to complete. This translates to a cost range of $100 to $600, based on an average billable rate of $100 per hour for QSDs.

In addition to the regular numeric action level sediment monitoring required by the permit, Responsible Dischargers in some watersheds located in Region 1, as specified in Attachment H, shall conduct RUSLE2 to demonstrate compliance with the waste load allocations. The estimated additional cost of the RUSLE2 calculation requirement will add $750 to $1,500 to each project in these Regions.

20 California Stormwater Quality Association (CASQA) Construction BMP Handbook, p. 1-7.

f. Temperature[21]

This General Permit includes seven temperature TMDLs, all of which are located in the North Coast Regional Water Quality Control Board's jurisdiction. The removal of riparian vegetation from road building and urbanization construction are amongst the sources observed to increase Northern California stream temperatures, which can negatively impact juvenile salmonids. Excessive sediment input also raises stream temperature by widening stream channels, filling pools, and eliminating riparian vegetation during flood events. Responsible Dischargers are required to comply with the requirements of this General Permit in order to achieve the applicable waste load allocations in the North Coast Temperature Implementation Policy. Compliance with these TMDLs is not expected to result in additional costs.

g. Metals and Toxics[22]

Metals (e.g., aluminum, cadmium, chromium, copper, lead, mercury, nickel, and zinc) and selenium can be found in construction stormwater discharges and are potentially toxic to aquatic life. Many of the equipment and materials used in the built environment (e.g., pipes, rebar, conductors, galvanized metal, paint, vehicles, preserved wood, tires, and vehicle brakes) contain metals, which enter stormwater as the surfaces corrode, decay, dissolve, flake, leach, or rust.

Toxic, synthetic organic compounds (e.g., adhesives, cleaners, herbicides, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, sealants, solvents) may be found in low concentrations but can still be toxic to aquatic life. Sources of synthetic organic compounds at construction sites include, but are not limited to, exposure of the compounds to stormwater during use and/or storage, improper disposal, and accidental release into storm drains or off-site.

The primary transport mechanism for metals and toxics is the mobilization and discharge of fine sediment through stormwater. Metals and organic compounds have an affinity for other organic substances and will partition from water and sorb to sediment. For this reason, it was appropriate to translate mass-based waste load allocations into requiring additional RUSLE2 modeling to estimate sediment delivery from a construction site into a watershed. Using RUSLE2 to

21 United States Environmental Protection Agency Region IX, Final Upper Main Eel River and Tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury) Total Maximum Daily Loads for Temperature and Sediment (December 29, 2004) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_upper_main/pdf/uer-tmdl-final-12-28.pdf> [as of May 20, 2021]

22 CASQA Construction BMP Handbook, p. 1-7.

demonstrate compliance with the waste load allocations avoids cost impacts associated with monitoring for toxic and metal pollutants.

However, a number of the metal and toxics TMDLs are assigned concentration-based waste load allocations, which were translated into numeric action levels or numeric effluent limitations. Many dischargers are not currently implementing BMPs designed to minimize concentrations for metals and toxics, but many Responsible Dischargers will need to implement BMPs designed to comply with the TMDL requirements. The compliance cost impact for the metal and toxics TMDL implementation is expected to be similar to that for normal sediment removal unless site-specific advanced BMPs and additional monitoring are required to comply with the requirements of these TMDLs. In the latter case, more advanced systems such as bioretention ponds, active treatment systems, or membrane filtration structures will likely have costs in the tens of thousands of dollars.

If non-visible pollutant monitoring is required, Responsible Dischargers in some watersheds located in Regions 4, 8 and 9 (Los Angeles Basin, Santa Ana, San Diego), as specified in Attachment H, would have to conduct TMDL analyses for metals and toxics listed for the individual watersheds. These pollutants may include copper, lead, zinc, mercury, nickel, cadmium, chromium and selenium, and toxics in the form of organochlorine pesticides, polychlorinated biphenyls (PCB), and polycyclic aromatic hydrocarbons (PAH). The estimated additional cost of this TMDL monitoring would be approximately $200-$400 for sampling and $525-$750 for analysis and SMARTS data entry, per sampling location per event. For the Los Angeles Area Lakes TMDL, the waste load allocations for organochlorine pesticides and PCBs are below the analytical reporting limits. Additionally, the Los Angeles and Long Beach Harbor Waters TMDL waste load allocations for total copper, lead, and zinc are analytically detectible, but limited data from construction site stormwater sampling indicates that compliance with these waste load allocations would be extremely difficult. As further detailed below, because organochlorine pesticides, PCBs, copper, lead, and zinc all bind to sediment and sediment is a common pollutant in stormwater from construction sites that can be managed effectively with BMPs, compliance with these two TMDLs is implemented through a soil screening investigation and, if applicable, a total suspended solids (TSS) numeric effluent limitation detailed in Attachment H, Section I.G.5.

The soil screening investigation is used to determine the presence of the applicable metals, organochlorine pesticides, or PCBs by comparing the concentration of pollutants in the soil to the analytical reporting limit for each substance. The analytical reporting limit is the lowest concentration at which an analyte can be measured in a sample and its concentration can be reported with a reasonable degree of accuracy and precision.

If the analytical reporting limit for any of the TMDL-specific pollutants is exceeded in any soil sample obtained for the soil screening investigation, the Responsible Discharger will be required to sample for TSS as a proxy for the identified TMDL pollutants if the non-visible sampling requirements are triggered. The numeric effluent limitation for TSS is 100 mg/L, and any exceedances require corrective actions detailed in Attachment D, Section III.G and Attachment E, Section III.G.

The value of 100 mg/L TSS is derived from several lines of evidence, including a study where the probability curve between organochlorine pesticides and TSS was modeled to determine that 100 mg/L TSS is protective of water quality when the criteria for 4,4 DDE was 0.00059 mg/L which is equal to the waste load allocation concentrations for chlordane and 4,4 DDT listed in the Los Angeles Area Lakes TMDL. Additionally, a 2018 study found that 100 mg/L TSS correlated with the boundary between particulate and dissolved phase metals in multiple watersheds when the K_d (distribution coefficient) for the metal is 10,000 L/kg.[23]

I.G.6. Stormwater BMP Selection

a. This General Permit provides dischargers flexibility in selecting the site-specific BMPs necessary to achieve compliance. This flexibility is also provided to Responsible Dischargers in selecting, installing, and maintaining the appropriate BMPs for site-specific situations to meet applicable TMDL requirements, including BMP combinations of:

   i. Non-structural BMPs (such as good housekeeping and staff training);

   ii. Structural source control BMPs (physical, structural, or mechanical devices or BMPs intended to prevent pollutants from entering stormwater) such as erosion control practices, maintenance of stormwater facilities (e.g., cleaning out sediment traps), construction of roofs over storage and working areas, and direction of equipment wash water and similar discharges to the sanitary sewer or other end-use systems; and/or

   iii. Structural treatment BMPs which include flow or volume-based treatment BMPs. Structural source control and treatment BMPs usually include a capital investment but are cost-effective compared to removing pollutants

23 Nasrabadi T, Ruegner H, Schwientek M, Bennett J, Fazel Valipour S, Grathwohl P (2018) “Bulk metal concentrations versus total suspended solids in rivers: Time-invariant & catchment-specific relationships.”
Washington Department of Ecology (2004) “A Total Maximum Daily Load Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River.”
Angela Gorgogline, Fabián A. Bomberdelli, Bruno J. L. Pitton, Lorence R. Oki, Darren L. Haver and Thomas M. Young (2018), “Role of Sediments in Insecticide Runoff from Urban Surfaces: Analysis and Modeling.”

after they have entered stormwater and been discharged into a receiving water body.

b. Stormwater BMP categories for the TMDL pollutant types above are, in general, physical, chemical, hydraulic, and biological. Selection of appropriate site BMPs must be determined based on site-specific factors. No single BMP can achieve the required pollutant reductions for every given situation or pollutant, and each BMP approach has pros and cons. The Responsible Discharger should consider the cost-benefit[24] when selecting stormwater BMPs. Some factors include, but are not limited to, upfront-cost, maintenance-cost, pollutant removal efficiency per area/treatment unit, local permitting, site hydrology and geology, safety, space, staffing, and monitoring needs for implementing the BMP(s). There are many ways to calculate the upfront and maintenance cost of BMPs that consider, for example, BMP sizing, the annual cost for maintenance and/or the annual maintenance hours required.[25]

Table 1 – University of New Hampshire Stormwater Center[26] Select BMP Maintenance Costs and Hours

BMP	Maintenance Cost (per year)	Annual Maintenance Hours
Bioretention	$1,890.00	20.7
Chamber System	Not Assessed	Not Assessed
Detention Pond	$2,380.00	24.0
Gravel Wetland	$2,138.00	21.7
Porous Asphalt	$1,080.00	6.0
Pervious Concrete	$1,080.00	6.0
Retention Pond	$3,060.00	28.0
Sand Filter	$2,807.00	28.5

I.G.7. Stormwater BMP Categories

24 State of Hawaii Department of Transportation Highways Division. Stormwater Permanent Best Management Practices Manual, page 7-2 Table 1. (February 2007). <http://hidot.hawaii.gov/wp-content/uploads/2015/05/Appx-E.1-Permanent-BMP-Manual-Feb-2007.pdf>. [as of May 20, 2021]. (State of Hawaii BMP Manual)

25 U.S. EPA. Methodology for developing cost estimates for Opti-Tool Memorandum (February 20, 2016), page 8. <https://www3.epa.gov/region1/npdes/stormwater/tools/green-infrastructure-stormwater-bmp-cost-estimation.pdf>. [as of April 28, 2022]. (U.S. EPA BMP Cost Estimation Memorandum)

26 U.S. EPA BMP Cost Estimation Memorandum, University of New Hampshire Stormwater Center (UNHSC) Select BMP Maintenance Costs and Hours, page 8.

The following categories generally describe currently available types of stormwater BMPs, their expected effectiveness for the TMDL pollutant categories, and some general cost comparisons. The cost comparisons for 6.a-b are based on:

- Staff experience in administering this General Permit for the non-structural and structural source control BMPs;
- The CASQA Industrial and Commercial BMP Handbook for appropriateness of minimum BMPs to control pollutants;
- The CASQA Construction Handbook for appropriateness of minimum BMPs to control pollutants;[27] and
- The California Department of Transportation (Caltrans) Construction Site BMP Manual.[28]

The cost for non-structural controls, which includes good housekeeping, preventative maintenance, spill and leak prevention and response, erosion and sediment controls, employee training programs, and quality assurance and record keeping, is lower than the costs for other BMPs. For example, these costs consist of staff time for training or conducting routine minimum BMP activities and minimal costs for certain materials such as spill kits or for materials for retaining records. Costs for source control BMPs were estimated generally as being low, medium, or high, dependent on a variety of factors.

The cost comparisons and information in Table 2 for 6.a-i are based on general conclusions from research conducted by the California Stormwater Quality Association, U.S. EPA, U.S. Department of Transportation, State of Hawaii Department of Transportation Highways Division, State of Minnesota Pollution Control Agency, and the Water Environment and Reuse Foundation. State Water Board staff reviewed these sources on:

- The selection of BMPs for general categories of pollutants and performance of pollutant removal;
- The provided upfront costs for a BMP category from a range of low, medium, and high; and
- The provided maintenance costs for a BMP category from a range of low, medium, and high.

27 CASQA Construction BMP Handbook, 2015.

28 California Department of Transportation (Caltrans), Construction Site BMP Manual (May 2017). <https://dot.ca.gov/-/media/dot-media/programs/construction/documents/environmental-compliance/csbmp-may-2017-final.pdf> [as of May 20, 2021]

More specific information on methodology and estimates is available from these sources, which are cited below.

a. **Non-Structural BMPs**, which include, but are not limited to, site sweeping, staff training and education, dumpster and waste management, routine portable toilet maintenance and cleaning, and proper handling and spill response for construction materials.[29] These BMPs can significantly reduce pollutant concentrations in all categories (4.a-g) and can range from low to medium upfront costs depending on the staffing and size of size. In general, operation and maintenance costs are low.

b. **Source control BMPs**, which include minimizing or eliminating exposure of a pollutant source, can significantly reduce pollutant concentrations in all categories (4.a-g). Upfront costs can range from low (e.g., moving materials or activities indoors or under cover) to high (if, for example, the site must move or build extra covered areas/structures). In general, the operation and maintenance costs are low for exposure minimization and elimination BMPs.

c. **Bioretention BMPs[30]** are soil and plant-based filtration structures that reduce runoff velocity and remove pollutants over time through a variety of processes. Bioretention can significantly reduce pollutant concentrations for categories (4.a), (4.d), (4.e), (4.f), and (4.g) (varies for dissolved metals).[31] Usually, costs are medium to high[32] per area treated and are tied to proper sizing and design, with low to medium maintenance requirements and cost.[33]

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29 U.S. Department of Transportation (DOT), Federal Highway Administration. Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring. Section 6.5 Table 57. Relative Rankings of Cost Elements and Effective Life of BMP Options. <https://www.environment.fhwa.dot.gov/Env_topics/water/ultraurban_bmp_rpt/uubmp6p4.aspx> [as of April 28, 2022]. (U.S. DOT BMP Selection and Monitoring)

30 California Stormwater Association (CASQA), Industrial and Commercial Best Management Practice Online Handbook September 2014, TC-32. <https://www.casqa.org/sites/default/files/casqa-handbook-industrial/full_handbook_2014.pdf> [as of May 20, 2021] (CASQA Industrial and Commercial BMP Handbook)

31 Water Environment and Reuse Foundation (WERF). International Stormwater BMP Database 2020 Summary Statistics Final Report, <https://www.waterrf.org/system/files/resource/2020-11/DRPT-4968_0.pdf> [as of April 28, 2022]. (International Stormwater BMP Database).

32 State of Hawaii BMP Manual, page 7-2 Table 1.

33 U.S. DOT BMP Selection and Monitoring, section 6.5 Table 57; State of Hawaii BMP Manual, page 7-2 Table 1; U.S. EPA BMP Cost Estimation Memorandum, page 8.

d. **Media or Treatment Filtration BMPs**[34] include either active or passive processes. In passive processes, water flows through treatment media or surface by gravity. In active processes, stormwater flows through media via a pump or similar mechanized system. The media are usually a custom or proprietary blend from the manufacturer and/or vendor (e.g., flocculants, coagulants, carbon, sand, organics). Active systems are chambered and may include pretreatment features to enhance the treatment process. Media filtration can significantly reduce pollutant concentrations categories (4.a), (4.e), and (4.g)[35] depending on the specific treatment media. The costs vary significantly depending on the pollutant(s) intended for treatment, the size of the system, and the system design. Upfront costs are generally medium to high per area treated with medium to high maintenance requirements and cost.[36]

e. **Retention BMPs** (sediment basin, retention wet pond or extended detention wet pond)[37] are constructed basins that have a permanent pool of water most of the year which settle out pollutants and can use plant life to biologically remove pollutants. Retention can significantly reduce pollutant concentrations for all categories but (4.c) and effectiveness for category (4.g) varies depending on the metal and whether the metal is dissolved.[38] The upfront and maintenance requirements and costs are tied to proper sizing and design of the system and vary from medium to low.[39]

f. **Detention BMPs** (Dry extended detention ponds, dry ponds, extended detention basins, detention ponds, extended detention ponds)[40] are basins with designed outlets to achieve a required stormwater draw down time (e.g., 24, 48, or 72 hours). The basins are designed to detain stormwater runoff for some minimum time (e.g., 48 hours) allowing particles and associated pollutants to settle. These basins have a temporary wet pool dependent on the infiltration rate of the subsoil. Detention can significantly reduce pollutant concentrations

34 CASQA Industrial and Commercial BMP Handbook, TC-40 Media Filter.

35 CASQA Industrial and Commercial BMP Handbook, TC-40 Media Filter.

36 State of Hawaii BMP Manual, page 7-2 Table 1; U.S. DOT BMP Selection and Monitoring, section 6.5 Table 57; U.S. EPA BMP Cost Estimation Memorandum, page 8.

37 CASQA Industrial and Commercial BMP Handbook, TC-20 Wet Pond.

38 WERF International Stormwater BMP Database 2016 Summary Report.

39 State of Hawaii BMP Manual, page 7-2 Table 1; U.S. DOT BMP Selection and Monitoring, section 6.5 Table 57; U.S. EPA BMP Cost Estimation Memorandum, page 8.

40 CASQA Industrial and Commercial BMP Handbook, TC-22 Extended Detention Basins.

for all categories except for (4.c) and (4.g), though detention's effectiveness for metals is variable depending on the metal and whether the metal is dissolved.[41] The upfront and maintenance requirements and costs are tied to proper sizing and design of the system and vary from medium to low.[42]

g. **Wetland BMPs** (constructed wetlands)[43] are constructed basins with a permanent pool of water for most of the year and are shallower with more vegetation than wet ponds. Stormwater is stored in the shallow pools of vegetation. Pollutant removal is achieved through microbial transformation, plant uptake, settling, and adsorption. Pretreatment is suggested to reduce the needed annual maintenance by reducing the amount of sediment and other solids entering the BMP. Wetlands can significantly reduce pollutant concentrations for all categories except for (4.b) and (4.c).[44] The upfront costs are medium to high, and the operation and maintenance costs and requirements are medium.[45]

h. **Infiltration BMPs** (volume reduction)[46] are trenches or basins which store stormwater in the void space between the media (e.g., rock, stones, soil media) and infiltrates/exfiltrates through the bottom and sides into the ground. Infiltration reduces stormwater discharge volume and pollutant loadings to surface waters and can recharge groundwater aquifers or be used for other appropriate purposes and provide cost-savings by offsetting the use of potable water (e.g., cooling towers and equipment cleaning water). Pretreatment is necessary to limit the amount of gross pollutants, oil & grease, and sediment to the system to ensure the system functions properly. Infiltration can significantly reduce pollutant concentrations for all categories, however, in all cases fate and transport of pollutants to groundwater should be evaluated for impacts to drinking water beneficial uses (e.g., salts, solvents). The upfront and

41 WERF International Stormwater BMP Database 2016 Summary Report.

42 State of Hawaii BMP Manual, page 7-2 Table 1; U.S. DOT BMP Selection and Monitoring, section 6.5 Table 57; U.S. EPA BMP Cost Estimation Memorandum, page 8.

43 CASQA Industrial and Commercial BMP Handbook, TC-21 Constructed Wetlands.

44 WERF International Stormwater BMP Database 2016 Summary Report.

45 State of Hawaii BMP Manual, page 7-2 Table 1; U.S. DOT BMP Selection and Monitoring, section 6.5 Table 57; U.S. EPA BMP Cost Estimation Memorandum, page 8.

46 CASQA Industrial and Commercial BMP Handbook, TC-10 Infiltration Trench and TC-11 Infiltration Basin.

maintenance costs and requirements are tied to proper sizing and design of the system and are medium.[47]

Table 2 – Effective BMP Examples for TMDL Pollutant Categories[48]

Best Management Practice	Bacteria (4.a)	Chloride and Salts (4.b)[49]	Diazinon (4.c)	Nutrients (4.d)	Sediment (4.e)	Temperature (4.f)	Toxics and Metals (4.g)[50]
Non-Structural and Exposure Minimization	X	X	X	X	X	X	X
Bioretention Devices	X			X	X	X	X
Media or Treatment Filtration	X				X		X
Retention Basins/ Ponds	X	X		X	X	X	X
Detention Basins/ Ponds	X	X		X	X	X	
Constructed Wetlands	X			X	X	X	X
Infiltration or Volume Reduction	X	X		X	X	X	X

47 State of Hawaii BMP Manual, page 7-2 Table 1; U.S. DOT BMP Selection and Monitoring, section 6.5 Table 57; U.S. EPA BMP Cost Estimation Memorandum, page 8.

48 WERF International Stormwater BMP Database 2016 Summary Report. Also see Table 2 footnotes 47 and 48.

49 Not evaluated in the WERF International Stormwater BMP Database 2017 Summary and is based upon guidance from the Minnesota 2015 Industrial Stormwater BMP Handbook.

50 From CASQA TC-10 and TC-11 not evaluated in the WERF International Stormwater BMP Database 2017 Summary.

I.H. Rationale

I.H.1. General Permit Approach

A General Permit for construction activities over one acre is an appropriate permitting approach for the following reasons:

a. A General Permit is an efficient method to establish the essential regulatory requirements for a broad range of construction activities under differing site conditions;

b. A General Permit is the most efficient method to handle the large number of construction stormwater permit applications;

c. A General Permit application process for coverage is far less onerous than that for individual permit and hence more cost effective;

d. A General Permit is consistent with U.S. EPA's four-tier permitting strategy, the purpose of which is to use the flexibility provided by the Clean Water Act in designing a workable and efficient permitting system; and

e. A General Permit is designed to provide coverage for a group of related facilities or operations of a specific industry type or group of industries. It is appropriate when the discharge characteristics are sufficiently similar, and a standard set of permit requirements can effectively provide environmental protection and comply with water quality standards for discharges. In most cases, the general permit will provide sufficient and appropriate management requirements to protect the quality of receiving waters from discharges of stormwater from construction sites.

There may be instances where a General Permit is not appropriate for a specific construction project. A Regional Water Board may require any discharger otherwise covered under this General Permit to apply for and obtain an individual permit or apply for coverage under a more specific General Permit. The Regional Water Board must determine that this General Permit does not provide adequate assurance that water quality will be protected, or that there is a site-specific reason why an individual permit should be required.

There may be other permits or requirements in addition to this General Permit. For example, the discharger may also need a streambed alteration agreement from the California Department of Fish and Wildlife, a Water Quality Certification (CWA § 401) as administered by the State and Regional Water Boards, CWA § 404 permit administered by the U.S. Army Corp. of Engineers, and/or a permit for low threat or de minimis discharges. Contact the appropriate Regional Water Board(s) to determine if other permits are required for the construction activity.

I.H.2. Antidegradation Findings

Federal regulations at 40 Code of Federal Regulations § 131.12 require that state water quality standards include an antidegradation policy consistent with federal requirements. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). Where the federal antidegradation policy is applicable, the State Water Board has interpreted Resolution No. 68-16 to incorporate the federal antidegradation policy.[51] The permitted discharge must be consistent with the antidegradation provision of 40 Code of Federal Regulations § 131.12 and State Water Board Resolution No. 68-16. The State Water Board finds that the permitted discharges authorized by this general NPDES permit are consistent with the antidegradation provisions of 40 Code of Federal Regulations § 131.12 and State Water Board Resolution No. 68-16, as set forth herein.

In the context of this general NPDES permit, compliance with the federal antidegradation policy requires consideration of the following. First, the State Water Board must ensure that "existing instream uses and the level of water quality necessary to protect the existing uses" are maintained and protected.[52] Second, if the baseline quality of a waterbody for a given constituent "exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water,[53] that quality shall be maintained and protected" through the requirements of this general NPDES permit unless the State Water Board makes findings that: (1) any lowering of the water quality is "necessary to accommodate important economic or social development in the area in which the waters are located"; (2) "water quality adequate to protect existing uses fully" is assured; and (3) "the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control" are achieved.[54] Before allowing any lowering of high quality water, the Board must conduct an analysis of alternatives that evaluates practicable alternatives that would prevent or lessen the degradation associated with the discharges permitted. In the context of 40 Code of Federal

51 State Water Board Order WQ 86-17 (Fay), pages 16-19.

52 State Water Board, Administrative Procedures Update, Antidegradation Policy Implementation for NPDES Permitting, 90-004 (APU 90-004), page 4. 40 Code of Federal Regulations § 131.12(a)(1). This provision has been interpreted to mean that, "[i]f baseline water quality is equal to or less than the quality as defined by the water quality objective, water quality shall be maintained or improved to a level that achieves the objectives."

53 This discussion refers to such waters as "high quality waters."

54 40 Code of Federal Regulations § 131.12(a)(2).

Regulations § 131.12(a)(2)(ii), practicable means "technologically possible, able to be put into practice, and economically viable."[55]

The permit must also comply with any requirements of State Water Board Resolution No. 68-16 beyond those imposed through incorporation of the federal antidegradation policy.[56] Resolution No. 68-16 requires that high quality waters be maintained unless degradation is justified based on findings that any lowering of water quality is "consistent with the maximum benefit to the people of the State" and "will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies" and further that the discharge is subject to "waste discharge requirements which will result in the best practicable treatment or control of the discharge."[57] The baseline quality considered in making the appropriate findings is the best quality of the water since 1968, the year of adoption of Resolution No. 68-16, or a lower level if that lower level was allowed through a permitting or other regulatory action, such as establishing a water quality objective, that was consistent with the federal and state antidegradation policies.[58] The following analysis assumes, without deciding, that the baseline for antidegradation analysis is 1968.[59]

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55 40 Code of Federal Regulations § 131.3(n).

56 State Water Board Order No WQ 86-17 (Fay), page 23, Finding No. 11

57 State Water Board Orders WQ 81-5 (*City of Lompoc*), WQ 82-5 (*Chino Basin Municipal Water District)*, WQ 90-6 (*Environmental Resources Protection Council*). State Water Board Resolution 68-16, Resolve 2. Best practicable treatment or control is not defined in Resolution 68-16; however, the State Water Board has evaluated what level of treatment or control is technically achievable using "best efforts." *Questions and Answers,* State Water Board Resolution 68-16, (Feb. 16, 1995), pp. 5-6. The State Water Board states: "To evaluate the best practicable treatment or control method, the discharger should compare the proposed method to existing proven technology; evaluate performance data, e.g., through treatability studies; compare alternative methods of treatment or control; and/or consider the method currently used by the discharger or similarly situated dischargers...The costs of the treatment or control should also be considered...."

58 State Water Board APU 90-004, page.4. The baseline for application of the federal antidegradation policy is 1975, which is the date used in 40 Code of Federal Regulations § 131.3(e) to define existing uses of a waterbody. For state antidegradation requirements, see also *Asociacion de Gente Unida por el Agua (AGUA) v. Central Valley Water Board* (2012) 210 Cal.App.4th 1255,1270. The baseline for the application of the state antidegradation policy is generally the highest water quality achieved since 1968, the year the policy was adopted.

59 State Water Board Resolution 68-16, Resolve 1. The baseline may be later than 1968 for two reasons. First, the appropriate baseline is determined by the date on which a

a. The Board Is Not Required to Make Waterbody by Waterbody and Pollutant by Pollutant Antidegradation Findings

The State Water Board finds that it is not required to conduct a waterbody by waterbody and pollutant by pollutant antidegradation analysis for this permit. The State Water Board makes this finding for two reasons. First, the Administrative Procedures Update, Antidegradation Policy Implementation for NPDES Permitting, 90-004 (APU 90-004), which specifies a waterbody by waterbody and pollutant by pollutant analysis for some permitting actions, does not address permitting for diffuse stormwater discharges. Second, APU 90-004 itself indicates that a waterbody by waterbody and pollutant by pollutant analysis is only required when conducting a "complete" antidegradation analysis; a complete analysis, in turn, is not required where any "reduction in water quality is temporally limited and would not result in any long-term deleterious effects on water quality."[60] As detailed below in the section regarding waters that do not meet water quality objectives and in Alternative 1, a complete analysis is not required. The discussion below elaborates on these two reasons.

APU 90-004 is a State Water Board internal guidance document establishing methods for implementing the federal and state antidegradation policies in NPDES permits. APU 90-004 suggests that an antidegradation analysis requires a pollutant by pollutant and waterbody by waterbody analysis in certain contexts, specifically where the discharge at issue is a discrete discharge from a singular facility, such as discharges from publicly owned treatment works. However, APU 90-004 has limited value when considering antidegradation in the context of diffuse stormwater discharges from tens of thousands of future construction projects of a wide variety distributed throughout the entire state over the life of the permit, each with the potential for discharging multiple

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policy establishing the level of water quality to protect was effective.
State Water Board APU 90-004, page 2. The various water quality control plans and State Policies for Water Quality Control have been adopted and amended many times since the 1970's to include new or revised water quality objectives. Second, a permitting action with appropriate antidegradation findings allowing degradation may establish a new baseline consistent with the level of water quality achieved under that permit. The State Water Board has regulated construction stormwater discharges in the past through general permits issued in 1999 and 2009. APU 90-004 acknowledges that no antidegradation analysis is required where the water board has no expectation that water quality will be reduced by the permitting action; here, if the water quality achieved under the prior general permits had been used as the baseline, arguably, no antidegradation analysis would have been required. Nevertheless, for ease of analysis, 1968 is used herein as the baseline.

60 State Water Board APU 90-004, page 2.

pollutants, to a wide variety of waterbodies statewide.[61] This interpretation is sensible, if not necessary, for this general NPDES permit, given the short-term nature of construction projects and the fact that, as of the date of adoption of this permit, the type and location of the construction projects that will be regulated by this General Permit is unknown. Therefore, only a generalized antidegradation analysis can, and must, be conducted for the discharges authorized by this general NPDES permit.

In addition, reliable data on the baseline water quality since 1968 is not available for all pollutants for all surface waters of the state that might receive discharges authorized by this General Permit. The State Water Board did not begin conducting statewide assessments of water quality until 1973. That first assessment was based only on very limited sampling for only five water quality parameters on portions of 23 water bodies. Over the course of the next five decades, those assessments have gradually become more comprehensive and thorough, culminating with the State Water Board's most recent 2020-2022 Integrated Report, which assessed the waterbodies for three of the nine Regional Water Quality Control Boards. However, even though a large amount of ambient water quality data is now collected and evaluated for these biennial assessments, the integrated reports are focused on assessing whether the waterbodies are supporting beneficial uses. The assessments are not intended to provide information about whether the waterbodies are of a higher quality than necessary to support their beneficial uses.[62] As a result, this analysis assumes that some of the waterbodies that will receive stormwater discharges from some of the construction sites are high quality waters with respect to at least some pollutants that might be in the authorized discharges. Due to the wide variety and unknown identity of the large number of potential waterbodies that might receive authorized discharges from construction projects under this permit and the lack of specific, reliable data regarding each potential receiving waterbody, the analysis of waterbodies that might be affected by this general NPDES permit must also be done at a generalized level.

The State Water Board additionally finds that, even if APU 90-004 applies to the issuance of this permit, it requires at most a "simple" antidegradation analysis. APU 90-004 contemplates that a "simple" antidegradation analysis is

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61 State Water Board Order WQ 2018-0002, page 77. Reaches a similar conclusion for agricultural discharges. This is even more so for the discharges authorized by this Order, because, unlike discharges from agricultural lands, there is much more uncertainty as to the location of the future construction projects and the temporal nature of discharges of stormwater from construction sites.

62 Regional Water Quality Control Boards Biennial Assessments. <https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment> [as of July 19, 2022]

appropriate under specified circumstances. In particular, as stated above, APU 90-004 states that a simple antidegradation analysis is allowed when the "[Water] Board determines the reduction in water quality is temporally limited and will not result in any long-term deleterious effects on water quality; e.g., will cease after a storm event is over."[63]

APU 90-004 does not provide guidance on the scope and content of a simple antidegradation analysis. Nor does it define the terms "temporally limited" or "long term." Those terms must therefore be interpreted in the context of the types of discharges being permitted and with deference to the best professional judgment of the State Water Board. Construction stormwater discharges fit within the example provided by the APU and are temporal and inherently short-term. Therefore, any degradation would be temporally limited and would not result in long-term deleterious effects on water quality. In addition, the permit continues the requirements of the previous permits or imposes equivalent or more protective requirements such that, in at least at a generalized level, the water quality established under the prior permits is expected to be maintained and improved.

The State Water Board determines that the findings made below meet the requirements of a simple antidegradation analysis and are also consistent with an antidegradation analysis done at a generalized level, as appropriate for this permit. With these findings, based on the information available to it and using its best professional judgment, the State Water Board concludes that the discharge will not be adverse to the intent and purpose of the State and federal antidegradation policies. Regardless of APU 90-004's application, however, the below analysis is consistent with the generalized antidegradation analysis appropriate for this general NPDES permit and complies with both the federal antidegradation regulations, and with the State antidegradation policy.

b. The State Water Board Makes the Following Antidegradation Findings

The discharges permitted in the permit are consistent with the antidegradation provisions of 40 Code of Federal Regulations § 131.12 and Resolution No. 68-16. The State Water Board's conclusion that the terms and conditions of the permit are consistent with the antidegradation policies is based on the following analysis.

First, for waterbodies that meet, but do not exceed, the water quality objective for a particular pollutant, no antidegradation findings are required. For these waterbody and pollutant combinations, compliance with the General Permit's requirements ensures that all construction stormwater discharges authorized by

63 State Water Board APU 90-004, p. 2

this permit do not interfere with the maintenance and protection of existing beneficial uses and water quality objectives.

i. Waterbodies that do not meet water quality objectives (waterbodies that are not high quality)

Because coverage under this General Permit is available statewide, this General Permit authorizes discharges to at least some surface waters that are not meeting water quality objectives. Some of these waterbodies are listed on the State Water Board's section 303(d) list of impaired waters, some of which have applicable TMDLs developed by the Regional Water Boards or U.S. EPA.[64] Some receiving waters are not meeting water quality objectives for multiple pollutants. Under both federal and state antidegradation policies, these receiving waters are not considered "high quality" waters for these pollutants. For receiving waters that are not high quality waters, the federal antidegradation policy requires that regulatory actions ensure that existing instream uses and the level of water quality necessary to protect the existing uses are maintained and protected. (40 Code of Federal Regulations § 131.12(a)(1).)[65] The General Permit ensures that existing instream (beneficial) uses and the level of water quality necessary to protect the existing uses are maintained and protected through requirements that discharges authorized by this General Permit do not cause or contribute to exceedances of water quality objectives in the receiving water and to restore impaired waterbodies by requiring compliance with TMDL-specific requirements as set forth in Attachment H and compliance with receiving water limitations set forth in the General Permit, Section IV.D. These provisions are collectively designed to ensure that discharges authorized by this General Permit do not cause any further degradation of impaired waterbodies and do not interfere with the improvement of the quality of such waters to a level protective of existing uses over a time schedule that is as short as possible.

The antidegradation policies do not explicitly or implicitly override the authority and discretion the Clean Water Act and the Water Code grant to the State Water Board as to how it structures a permit to ensure water

64 Impaired waters, or waters that are not high quality, are not confined to those listed only on the 303(d) List. There are several reasons for this, including but not limited to that some of the 303(d) Lists do not reflect current data. In addition, sometimes the State lacks sufficient data to add a waterbody to the 303(d) List. Accordingly, the 303(d) List itself does not reflect all waterbodies that are impaired.

65 By its terms, State Water Board Resolution No. 68-16 does not separately apply to waters that are not high quality, except by incorporating the federal antidegradation policy as discussed above.

quality necessary to protect beneficial uses. The law does not require immediate restoration of impaired waterbodies nor does it require an immediate prohibition of discharges that contribute to an exceedance in the waterbody. Rather, federal regulations at 40 Code of Federal Regulations § 122.47 allow NPDES permits to have compliance schedules. Similarly, Water Code § 13263, subdivision (c), authorizes the Regional Water Boards to include a time schedule for achieving water quality objectives in waste discharge requirements. Consistent with Water Code § 13242, TMDL implementation plans, as incorporated into the water quality control plans, include a time schedule for actions to be taken. When issuing waste discharge requirements, Water Code § 13263 requires Regional Boards to implement any relevant water quality control plans that have been adopted. Certainly, water quality objectives must be achieved; but the law, as cited above, recognizes and allows for the fact that it can take time to restore or achieve the objectives. In this regard, some impaired waterbodies may fail to improve or, rarely, continue to degrade, for a period of time before showing improvement. This period of time may be as long as multiple years. This is not contrary to the authorities for compliance schedules stated above and is not contrary to the antidegradation policies.

ii. High quality waterbodies

Some of the waterbodies within the area covered by this General Permit may be high quality waters for certain pollutants. Some of these waterbodies may be currently high quality as compared to currently applicable objectives. Others of these waterbodies may be currently impaired but may be classified as high quality waters because they were historically high quality for certain pollutants.

Although compliance with the General Permit will generally not result in degradation in high quality waters, compliance with the General Permit does not guarantee that there could never be any degradation in any high quality waters from a specific construction project. Therefore, the State Water Board makes the following findings to comply with antidegradation requirements for any discharges authorized by this General Permit to high quality waters.

For high quality waterbodies, the State Water Board finds as follows:

First, to determine whether the discharge is necessary, the State Water Board must determine whether there are any cost-effective alternatives available that eliminate or reduce the reduction in water quality. For a general, statewide permit, the appropriate inquiry is whether there are cost-effective alternatives to the regulatory framework in the General Permit, not whether there is a cost-effective alternative to an individual project eligible for enrollment under the General Permit. The State Water Board has

determined that construction stormwater discharges are appropriately regulated under a general permit rather than individual NPDES permits. There are typically approximately 10,000 ongoing construction projects with stormwater discharges authorized under this General Permit (or its predecessor general permits) at any given time, according to the State Water Board's SMARTS database. These projects typically last from one to three years, at which point coverage under this General Permit is terminated and discharges are no longer authorized. Employing the large number of additional staff necessary to review and issue such a high volume of individual stormwater permits would not be efficient use of resources, would necessitate very large increases in permit fees under Water Code § 13260, subdivision (d)(1)(B) to pay for the additional staff, and would likely result in economic disruption due to delays in permitting construction projects. As further explained in Fact Sheet, Section I.H.1, a General Permit is the appropriate mechanism to regulate a large number of similar discharges while still protecting water quality.

Practicable Alternatives: The State Water Board has evaluated a range of practicable alternatives that would prevent or lessen any degradation associated with permitted construction stormwater discharges to high quality waters. These alternatives are discussed below.

Alternative 1 – The first alternative is the approach that the General Permit takes. The General Permit requires dischargers, with the assistance of qualified stormwater professionals, to:

1) Determine the risk the construction project poses on the receiving water, based on how much sediment is anticipated to be discharged offsite and whether the receiving water is impaired for sediment or supports COLD, SPAWN, and MIGRATORY beneficial uses. Higher risk projects must comply with additional permit requirements, including sampling and monitoring, and additional BMPs.
2) Assess conditions at the construction site that could impact stormwater quality such as sources of pollutants that could be transported offsite by stormwater runoff.
3) Develop a site-specific Stormwater Pollution Prevention Plan to include information needed to demonstrate compliance with all requirements of the permit and to ensure water quality is protected (Fact Sheet, Section I.V.). This includes identification and implementation of a suite of best management practices tailored to the construction project and the conditions at the site to minimize or eliminate the stormwater discharges, or the pollutants in the stormwater discharges, or both, in compliance with BCT/BAT/BPT standards.

4) Visually inspect the construction site to verify implementation of best management practices is in accordance with the Stormwater Pollution Prevention Plan.

5) Monitor stormwater discharges for pH and turbidity during each day of a qualifying precipitation event and compare sample results to numeric action levels to verify that implementation of the best management practices is protective of water quality.

6) Monitor stormwater discharges for TMDL-specific pollutants, if applicable, and compare to a TMDL-related numeric action level or numeric effluent limitation to verify that the discharge complies with the TMDL-based waste load allocations. TMDL monitoring requirements apply if the site is in a TMDL watershed with waste load allocations translated into numeric action levels or numeric effluent limitations; has sources of the TMDL-specific pollutant(s) onsite; and there is a failure to implement best management practices, a container spill or leak, or a best management practices breach, failure, or malfunction.

7) Take corrective actions such as repairing or implementing additional best management practices, if visual inspections and discharge monitoring indicate a deficiency.

8) Submit sampling and annual reports regarding implementation of this General Permit.

All discharges authorized by this General Permit must comply with receiving water limitations that require that discharges 1) do not adversely affect human health or the environment, 2) do not contain pollutants in quantities that threaten to cause pollution or public nuisance, 3) do not contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or standards contained within an applicable water quality control plan, and 4) comply with the applicable TMDL implementation requirements of this General Permit (Order, Section IV.D). Furthermore, the Regional Water Boards retain the authority to impose any additional site-specific requirements where necessary to prevent degradation and to protect water quality standards.

Under this General Permit, there are disincentives to discharging such that dischargers already seek to minimize or eliminate their stormwater discharges where possible. The General Permit promotes efforts to maximize the capture of stormwater from construction sites through retention basins, infiltration galleries, and other controls that reduce the amount of stormwater that is discharged from the site. If there are no discharges, the General Permit’s sampling requirements and any otherwise applicable numeric action levels or numeric effluent limitations are not

applicable to that discharger and the discharger would not risk an enforcement action for any potential discharge-related General Permit violations. Accordingly, dischargers have an incentive to schedule their work during dry weather or to retain stormwater whenever possible. Collectively, these requirements generally prevent degradation, and where that is not possible, minimize degradation and the duration of any degradation. This alternative does not, however, guarantee that no construction site will ever have authorized stormwater discharges that may result in temporary, limited degradation.

Alternative 2 – The second alternative would be more stringent permit requirements in watersheds with high quality waters. Different approaches for more stringent requirements could include a construction prohibition, a prohibition of discharges, a requirement that active treatment be used for all pollutants in all stormwater discharges, or numeric effluent limitations for all pollutants in all stormwater discharges.

The State Water Board finds that more stringent requirements are not currently possible for any of these approaches for the following reasons:

- **Construction prohibition**: Such a prohibition would exceed the State Water Board's authority to regulate discharges of waste to waters of the state from discharges. The State Water Board does not have the authority to directly regulate land use. (Wat. Code, §§ 13260, 13263.) Such a prohibition is also not possible because many construction projects are essential and cannot be relocated (e.g., repair of existing roads and utilities).
- **Prohibition on discharges**: By eliminating all stormwater discharges, pollutants from stormwater would not reach high quality receiving waters during wet weather and therefore could not cause any degradation. As wet weather will always occur, this approach would require all construction sites to retain all stormwater through retention basins, infiltration galleries, and other controls that would prevent stormwater from reaching surface waters through infiltration, evaporation, or storage and reuse. The complete retention to eliminate any possibility of discharge is not typically technologically or economically feasible in many locations. Although retention, detention, and run-on BMPs are frequently implemented as part of the SWPPP, these BMPs are typically designed only to reduce stormwater discharges or the likelihood thereof, not to completely eliminate discharges. Retention that eliminates the possibility of discharges to any surface waters would require much larger sizing than a retention or detention BMP used to reduce discharges because it would need to be sized to capture even extreme weather

events.[66] U.S. EPA estimated that the base cost, which does not include costs of acquiring the land,[67] annual maintenance costs, design, geotechnical testing, legal fees, land costs, and other unexpected or additional costs such as fees for disposing of contaminated excavated soils, for a retention and detention basins is $0.50-$1.00 per cubic foot.[68] The estimate of typical costs reflects 15,000 – 150,000 cubic feet of storage. Thus, a retention basin for a 50-acre residential site would have the base cost of $100,000. But this base cost only represents the typical implementation of stormwater BMPs, which only provide for detention or partial retention. A retention basin for a 50-acre residential site that eliminated the possibility of discharge would need to be much larger and therefore is more costly. Most California counties require stormwater basins to be designed to a 2-year, 24-hour storm intensity at minimum. Assuming a typical bare soil runoff coefficient of 0.35 (Type C soil), a 2-year, 24-hour storm (2.27 inches of rainfall) at a 50-acre site in Orange County, for example, would produce a total of approximately 3.31 acre-feet of runoff per day. Adding a normal Factor of Safety for detention structures of 2.0, 5,770 cubic feet of water would need to be retained per acre, or 288,400 cubic feet for the entire parcel. An 'atmospheric river' type storm that lasted three days at this intensity would require at least six times this amount of storage, as the runoff coefficient would increase each day. The costs would vary significantly depending on land costs (e.g., urban versus rural area) and slope. Complete retention of all stormwater would not be technologically feasible at all construction sites.

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66 For example, in October 2021, there were historic Category 5 atmospheric rivers throughout California.

67 The cost of acquiring land can be substantial.
E.g. Working Paper 19-01: The Price of Residential Land for Counties, ZIP codes, and Census Tracts in the United States.,
<https://www.fhfa.gov/PolicyProgramsResearch/Research/Pages/wp1901.aspx> [as of July 19, 2022]. For example, in Los Angeles County, residential land costs were estimated at $1-3 million per acre. *Id.*
See also, Southern California Coastal Water Research Project. *Concept Development: Design Storm for Water Quality in the Los Angeles Region, Technical Report 520.* October 1, 2007, page 7.
<https://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/520_designStorm.pdf> [as of July 19, 2022].

68 U.S. EPA Urban Storm Water BMP Preliminary Data Summary - 1999, page 6-3.
<https://www.epa.gov/sites/default/files/2015-11/documents/urban-stormwater-bmps_preliminary-study_1999.pdf> [as of July 19, 2022]. Other costs could include, for example, filling, regrading, and vegetating the retention pond after the construction project has concluded.

Certain sediment types are poorly suited for infiltration (e.g., clay soils infiltrate poorly). Construction sites are inherently dynamic, but retention basins cannot move. Stormwater may have different discharge points during different phases of construction, and a retention basin could not be moved to accommodate the changing points. In urban areas with infill development, there is not sufficient space for such large retention basins. In some cases, such large basins could also implicate vector control or public safety issues.[69] In other areas where the groundwater table is high, it may not be possible to design an effective retention basin without hitting the groundwater table and potentially causing groundwater quality problems.

Even if complete retention were technologically possible, the costs associated with constructing effective complete retention structures are not generally economically feasible for most construction projects.[70] Expensive, structural BMPs are generally not economically feasible to implement on construction sites, which are temporary in nature, in part because the useful life of the investment is short-term and difficult to recoup. Requiring implementation of substantially more expensive controls may render projects that are beneficial to the people of the state economically infeasible. For example, government-funded road projects often operate on fixed budgets where increased costs on one construction project leaves less money to complete other projects.[71] Similarly, restoration projects are frequently funded by grants. Increased construction costs would render less money available for additional restoration projects. Increased construction

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69 Southern California Coastal Water Research Project. *Concept Development: Design Storm for Water Quality in the Los Angeles Region, Technical Report 520*. October 1, 2007, page 7. <https://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/520_designStorm.pdf> [as of July 19, 2022]. Notes the potential trade-offs between water quality and ensuring public safety, including protecting property from flood damage and maintaining passable roadways.

70 Southern California Coastal Water Research Project. *Concept Development: Design Storm for Water Quality in the Los Angeles Region, Technical Report 520*. October 1, 2007, p. 14. <https://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/520_designStorm.pdf> [as of July 19, 2022]. Provides an example. Discusses the feasibility of BMP implementation costs in the Ballona Creek watershed and highlighting the difference between new or redevelopment versus retrofit.

71 Overview of Transportation Funding (2015). <https://lao.ca.gov/handouts/transportation/2015/Transportation-Funding-022315.pdf> [as of July 19, 2022]. For example, general obligation bonds can help pay for transportation projects and are for a set amount.

costs might also deter affordable housing projects, which operate on thin margins and frequently depend on government subsidies.[72]

Determining a range of costs for complete retention of stormwater is complex due to the wide variety of conditions. Costs vary widely across construction projects throughout California due to precipitation, size, soil types, topography, and other location-specific factors such as labor costs. Two examples of costs to complete full retention of stormwater on a site with 16 acres of disturbed soil area (mean CGP size), based solely on the difference in precipitation, are as follows:

On a 16-acre project in the rainy North Coast region, a 2 year, 24-hour storm (2.93 inches of rainfall) would require a 148,900 cubic foot capacity detention basin, equivalent to a 29,780 square foot excavation at five feet in depth, including the required one foot of freeboard. A typical cost of $10/cubic yard for excavation[73] is approximately $55,150, not including off-haul of spoils, if required. In addition, the basin would require engineered backfill if any roadways or buildings were subsequently constructed at the site, increasing the costs by $415,000 for import backfill and compaction (at $75/cubic yard).[74] This scenario would therefore have a total cost of at least $470,150, since there would be additional costs for engineering design and final grading.

On a 16-acre project in an arid southern California region, the 2-year, 24-hour storm (1.72 inches of rainfall) for a similar level of retention would require an 87,400 cubic foot capacity detention basin at an excavation-only cost of $32,375. Using the same assumptions as above, engineered backfill would increase the total costs to at least $275,150.

The above examples show excavation and backfill costs only for a one-day design storm, and would add $3,000–$5,000 to the cost of each house in a typical residential development, depending on location (based on six houses/acre). However, an ‘atmospheric river’ storm lasting three days at the same intensity would require far more retention capacity, as the runoff coefficient would increase each day. In the northern part of the state, such a storm would necessitate an 893,400 cubic foot (33,100 cubic yard) basin, covering four acres at a four-foot depth and one foot of freeboard. The costs

72 Affordable Housing and Sustainable Communities Program. <https://www.hcd.ca.gov/affordable-housing-and-sustainable-communities> [as of July 19, 2022]. Provides an example.

73 Caltrans project 01-476604, Mendocino County, Item 044. <http://website.dot.ca.gov/hq/construc/estdet/01-476604-025.txt> [as of July 19, 2022]

74 Caltrans project 01-262004, Mendocino County, Item 072. <http://website.dot.ca.gov/hq/construc/estdet/01-262004-064.txt> [as of July 19, 2022]

for excavation and engineered backfill would amount to $2.8 million. Complete retention of stormwater for all construction sites regulated by this General Permit would be cost prohibitive.

- **Active treatment**: This approach would be to require the use of active treatment of all construction stormwater prior to discharge in areas with high quality waters. This approach may not be feasible because generally speaking, this permit may not specify the design location, type of construction, or particular manner in which compliance may be achieved with a requirement. (Wat. Code, § 13360.) In addition, active treatment is highly effective at treating water for TSS and turbidity, but generally does not remove pollutants that do not sorb to sediment, such as dissolved phase metals and hydrocarbon compounds. In order for this approach to be successful in guaranteeing no degradation of high quality waters, it would be necessary for active treatment to reliably treat all pollutants to levels that are equal to, or better than, the actual levels of each pollutant in each waterbody. Such limitations could only be established if the high quality waterbody and existing levels of each pollutant for which that water was high quality were known. As explained above, this data does not exist on a statewide basis. In addition, active treatment of all stormwater would likely be cost-prohibitive for some construction sites, because the cost of active treatment is directly related to the volume of stormwater that must be treated. For example, costs for a one-time use of active treatment systems ranges from $10,029 for 1.9 acres to $96,674 for 145 acres.[75] However, current information obtained from staff conversations with an active treatment system vendor in the Sacramento area indicates that installed systems typically range from $70,000-$80,000 for a 200 gallon per minute seasonal system to $700,000 for a 2,000 gallon per minute seasonal system such as may be required to accommodate 3-inch storm events on a 16-acre site. Finally, based on staff conversations with the same active treatment system vendor and staff's limited market search for additional active treatment vendors, active treatment systems are not evenly distributed throughout the state and there are currently an insufficient number of systems available to deploy to all construction sites during regional precipitation events.

75 U.S. EPA, Development Document for Final Effluent Guidelines and Standards for the Construction & Development Category (Nov. 2009) page. 9-35. <https://www.epa.gov/sites/default/files/2015-06/documents/construction_development_dd_2009_chapters_1-11.pdf> [as of July 19, 2022]

- **Establishment of numeric effluent limitations for discharges to high quality waters**: In order to prevent any degradation of any high quality water under this approach, the General Permit would have to implement water quality-based numeric effluent limitations that are equal to, or lower than, the actual ambient levels of each pollutant in each waterbody. Such limitations could only be established if the high quality waterbody and existing levels of each pollutant for which that water was high quality were known. As explained above, this data does not exist on a statewide basis. Even if the data did exist, it would not be possible to determine whether the methods to achieve compliance with the numeric effluent limitations would be technically or economically feasible at most or all construction sites. Further, because such numeric effluent limitations would necessarily be waterbody and pollutant specific, administration of such limitations would not be feasible under the General Permit structure.

Alternative 3 – Given the uncertainties about the locations of, and data limitations about, high quality waters, a third alternative would be to mandate specific requirements that would apply to all construction projects statewide. These statewide requirements could include more numeric effluent limitations, more stringent numeric action levels, or requiring the installation of specific BMPs, like active treatment.

- **Require on-site stormwater retention for a compliance storm**: Because a prohibition on all discharges is not feasible as discussed above, one approach would be to require controls that eliminated discharges in most storms. For example, dischargers could be required to retain all runoff from the 95th percentile, 24-hour storm volume or the 85th percentile, 24-hour storm volume.[76] Requiring all construction sites to install retention basins designed to retain all stormwater from large "compliance storms," rather than complete retention from storms of all sizes, would encounter similar technological and economic difficulties as those identified above, just at a somewhat lesser scale. Considerations would have to include engineering design cost, available space for both the basin and excavation spoils stockpiles, avoidance of underground utility installations, schedule delays caused by constructing, using, backfilling and regrading the basin, off-haul of spoils and import of

76 Southern California Coastal Water Research Project. *Concept Development: Design Storm for Water Quality in the Los Angeles Region, Technical Report 520*, October 1, 2007, page 12. <https://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/520_designStorm.pdf> [as of July 19, 2022]. For example, a BMP sized to capture 90% instead of 80% of decadal runoff volume would require a BMP nearly triple the size.

engineered fill, if required, disposition of accumulated stormwater or allowance for evaporation, vector control, and safety barriers. Further, there is no guarantee that the discharges from storms larger than the selected compliance storm would not cause degradation of high quality waters.

- **Establishment of numeric technology based effluent limitations statewide**: Even assuming that there might be a treatment technology that, if utilized, could guarantee no degradation of high quality waters, the State Water Board does not have the data that would be necessary to impose effluent limitation that would be derived from the use of that technology. In previous litigation, the superior court determined that the State Water Board did not have sufficient BMP performance data to impose technology based numeric effluent limitations for pH and turbidity for Risk Level 3 sites. Absent the development of this needed additional data, the Board would not be able to support the implementation of numeric technology based effluent limitations to prevent any possibility of degradation.[77]
- **Active treatment**: This option would suffer from the same problems identified for active treatment described under alternative 2, above. Consistent with the Blue Ribbon Panel's findings, active treatment is not feasible for all sites: "The active treatment systems have generally been employed on sites five acres or larger. While the systems are technically

77 *California Building Industry Association v. State Water Resources Control Board*, Sacramento Superior Court Case No. 34-20009-80000338-CU-WM-GDS. Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category, 79 Federal Register 12661-01 (March 06,2014). The U.S. EPA provides an explanation for not including a previous numeric effluent limitation for turbidity in its Effluent Limitation Guidelines for construction stormwater: "At this time, EPA is concerned that a numeric limitation may create a disincentive to green infrastructure techniques for managing stormwater. For example, meeting a numeric standard may require installation of a sediment basin or other impoundment on certain sites, which may be a disincentive to installing distributed stormwater controls. Also, EPA recognizes that additional data collection would likely be necessary in order to inform any establishment of numeric discharge standards and monitoring requirements in the future. At such time that EPA decides on a path forward with respect to numeric discharge standards and monitoring requirements, EPA will take appropriate actions to notify interested stakeholders. EPA encourages interested parties to continue submitting data and information to EPA with respect to numeric discharge standards at construction sites."

feasible for sites of any size, including sites or drainages as small as an acre or less, the cost may be prohibitive."[78]

- **Use of other, specific BMPs**: Alternative 1 already requires the use of minimum BMPs such as non-structural BMPs (e.g., maintenance, good housekeeping, staff training/education, proper handling, spill response, project planning/scheduling) and source control BMPs (e.g., site design and planning, irrigation). This alternative approach would be to specify that certain additional BMPs would need to be used at all sites. This approach may not be feasible because generally speaking, as discussed above, this General Permit may not specify the design location, type of construction, or particular manner in which compliance may be had with a requirement. (Wat. Code, § 13360.) In addition, the efficacy of any structural BMPs are both site specific and pollutant specific, such that there are not universally beneficial BMPs that should be mandatory on all sites.

One of the first basic steps in creating a stormwater management plan is to assess site and watershed conditions. Site and watershed conditions include information such as geographic features or landmarks, drainage patterns, and general topography. Next, a plan should evaluate pollutants of concern and other additional benefits that BMPs can provide. Accordingly, the selection of appropriate BMPs is a highly site-specific inquiry. Because of the complexity of appropriate BMP selection, the permit requires a qualified stormwater professional to identify the appropriate site-specific BMPs and prepare the SWPPP. The General Permit imposes substantial education and training requirements for qualified stormwater professionals to ensure that the selection of site-specific BMPs is appropriate. (See General Permit, Sections V.C. – V.I.)

For example, bioretention basins are very effective for multiple pollutants, but are not feasible at many construction sites, as discussed in further detail in Fact Sheet, Section I.G.5.d. Media filters are another BMP that may be effective at removing multiple pollutants, but are already typically recommended by qualified stormwater professionals under Alternative 1. Accordingly, requiring the universal use of specific structural BMPs for antidegradation purposes is not a feasible alternative because requiring specific BMPs may not be effective at reducing pollution and may not be technically feasible or cost effective depending on site characteristics.

78 The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial, and Construction Activities, page 16.

iii. Economic and Social Development Considerations and Consistency with Maximum Benefit to the People of the State

The State Water Board adopts the approach set forth in Alternative 1 for the General Permit. This alternative may allow limited and temporal degradation of high quality waters by construction stormwater discharges, but this alternative does require all construction stormwater discharges to not cause or contribute to exceedances of water quality objectives or interfere with the maintenance and protection of beneficial uses for high quality waters in all cases. Two of the approaches described under Alternative 2 would guarantee no degradation of high quality waters (i.e., construction prohibition and prohibition on discharges), but all of the approaches described under Alternative 2 are infeasible for the reasons described above and would hamper important social and economic development. The approaches described under Alternative 3 would not guarantee no degradation of high quality waters from authorized discharges, and are either technically or economically infeasible, or contrary to the framework of a general permit in which the methods for reducing or eliminating pollutants in stormwater discharges are developed by a stormwater professional and tailored to each individual construction site, or both.

The limited and temporal degradation of high quality waters that could occur under this General Permit is necessary to accommodate important economic or social development in the area and is consistent with the maximum benefit to the people of the state. Construction activities support important economic and social development. Construction is a large, vital industry in California, adding an estimated $240 billion in value in 2017 and a major source of employment.[79] The U.S. Bureau of Labor Statistics estimates that there are 968,760 construction laborers in California.[80] Construction projects include critical infrastructure (e.g., broadband

79 U. S. Census Bureau. Construction (NAICS Sector 23), (2017). <https://www.census.gov/data/tables/2017/econ/economic-census/naics-sector-23.html> [as of July 19, 2022].
Legislative Analyst's Office. CalFacts 2018. Construction is one of the major sectors for California's 17 million jobs. <https://lao.ca.gov/reports/2018/3905/calfacts-2018.pdf> [as of July 19, 2022].

80 U. S. Bureau of Labor Statistics. Occupation Employment and Wage Statistics, 47-2061 Construction Laborers (May 2021). <https://www.bls.gov/oes/current/oes472061.htm> [as of July 19, 2022].

internet,[81] roads,[82] utility lines), public safety (e.g., flood control,[83] system hardening[84]), restoration,[85] housing,[86] and commercial development. As noted by many commenters on the draft versions of this General Permit, California is facing a housing shortage.

Where there is a public utility, increased construction costs could be passed on by increased fees to utility users or road users. Higher construction costs could affect whether a housing project remains affordable.

Importantly, under Alternative 1, notwithstanding the possibility of limited and temporal degradation from some authorized stormwater discharges, the State Water Board finds that authorized stormwater discharges will not cause or contribute to exceedances of water quality objectives in high quality waters, and therefore will not cause pollution or conditions of nuisance or otherwise adversely affect beneficial uses of the receiving waterbodies. Because all beneficial uses will be maintained and protected, there will be only very minor impacts to water quality resulting from any degradation that does occur, so any resulting harm to the public interest associated with any degradation will also be very minor and speculative

81 State of California Executive Department. Executive Order N-73-20 (August 14, 2020). <https://www.gov.ca.gov/wp-content/uploads/2020/08/8.14.20-EO-N-73-20.pdf> [as of July 19, 2022].

82 State Highway Operation and Protection Program. Ten-Year Project Book, Fiscal Years 2021/22-2030/31. <https://dot.ca.gov/-/media/dot-media/programs/asset-management/documents/2022-q2-book-combined-a11y.pdf> [as of July 19, 2022].

83 California Department of Water Resources. Small Communities Flood Risk Reduction. <https://water.ca.gov/Work-With-Us/Grants-And-Loans/Small-Communities-Flood-Risk-Reduction> [July 19, 2022].

84 E.g., Governor Newsom Signs Historic Legislation to Boost California's Housing Supply and Fight the Housing Crisis (September 16, 2021). <https://www.nytimes.com/2021/07/21/business/energy-environment/pge-underground-powerlines-wildfires.html> [as of July 19, 2022]. In response to wildfires, utility companies aim to put power lines underground.

85 Southern California Wetlands Recovery Project. Work Plan 2020. <https://scwrp.org/wp-content/uploads/2020/04/Work-Plan-Report-2020.pdf> [as of July 19, 2022].

86 Office of the Governor. Governor Newsom Signs Historic Legislation to Boost California's Housing Supply and Fight the Housing Crisis (September 16, 2021). <https://www.gov.ca.gov/2021/09/16/governor-newsom-signs-historic-legislation-to-boost-californias-housing-supply-and-fight-the-housing-crisis/> [as of July 19, 2022]. In 2021, Governor Newsom signed bipartisan legislation to expand housing production in California.

because all high quality waters will still fully support all beneficial uses. Therefore, it is not necessary to analyze the harm to the public interest associated with the authorized stormwater discharges, especially in a generalized and simple antidegradation analysis.

iv. Requirement for Highest Statutory and Regulatory Requirements and Best Practicable Treatment and Control

The permit requires the highest statutory and regulatory requirements and requires that the dischargers meet best practicable treatment or control and, as described more fully above, requires the following:

- Implementation of BAT/BCT/BPT, including compliance with U.S. EPA's effluent limitation guidelines for the construction and development category as the level of pollutant abatement that is the best available technology economically achievable;
- Compliance with receiving water limitations;
- Enhanced requirements on non-stormwater discharges;
- TMDL-specific requirements that are consistent with the waste load allocations established by TMDLs that identify construction stormwater as a source; and
- Reservation of authority for the Regional Water Boards to retain the ability to impose additional sampling and monitoring requirements or coverage under an individual NPDES permit if necessary.

v. Public Participation:

Numerous public participation opportunities have been provided during the development of this permit. In addition to the minimum public participation requirements required by the federal regulations governing NPDES permits and Water Code § 13167, State Water Board staff has met informally with stakeholders, held staff workshops, and accepted comments on an administrative draft of the permit.

I.I. Regional Water Board Authorities

Because this General Permit will be issued to thousands of construction sites across the State, the Regional Water Boards retain discretionary authority over certain issues that may arise from the discharges in their respective regions. This General Permit does not grant the Regional Water Boards any authority they do not otherwise have; rather, it merely emphasizes that the Regional Water Boards can take specific actions related to this General Permit. For example, the Regional Water Boards will be enforcing this General Permit and may need to adjust some requirements for a discharger based on the discharger's compliance history.

I.J. Construction Activities Covered

I.J.1. General Activities Covered

Construction activity phases (demolition and pre-development site preparation, grading and land development, streets and utilities, vertical construction, and final landscaping and site stabilization) can impact a construction site's runoff sediment supply, pollutant loading, and transport characteristics. These modifications can occur both during and after the construction phase and, without proper controls, such as the requirements set forth in this General Permit, could result in significant degradation of the established water body beneficial uses in California. The primary stormwater pollutant at construction sites is excess sediment. Excess sediment can cloud the water and reduce the amount of sunlight reaching aquatic plants, clog fish gills, smother aquatic habitat and spawning areas, and impede navigation in our waterways. Sediment also transports other pollutants such as nutrients, metals, oils, and greases, and pesticides. In addition to sediment, other pollutants that are commonly associated with construction activities include, but are not limited to, pollutants from cement, stucco, paints, cleaning materials, general debris, chemicals associated with historical structures mobilized through demolition, historical contamination chemicals in soil mobilized by construction disturbance, and other construction related products easily transported by stormwater runoff. Dischargers can reduce and avoid the effects of these pollutants on water quality through better construction site design and use of best management practices (BMPs).

a. In accordance with the Ninth Circuit Court of Appeals' decision in *Natural Resource Defense Council v. U.S. EPA* (9th Cir. 2008) 526 F.3d 591, and subsequent denial of the U.S. EPA's petition for reconsideration in November 2008, oil and gas construction activities discharging stormwater contaminated only with sediment are no longer exempt from the NPDES program;

b. Site geotechnical investigation work requires special precaution when backfilling bore holes so that aquifers are adequately protected from surface contamination;

c. Disturbances related to geotechnical or other site investigation work is a construction activity requiring permit coverage;

d. Construction activities that disturb 1 or more acres of soil associated with the construction of new fire prevention methods (e.g., fire barriers, fire breaks, and fire prevention areas) require permit coverage;

e. Stormwater discharges from dredge spoil placement that occur outside of U.S. Army Corps of Engineers jurisdiction (upland sites) and that disturb one or more acres of land surface from construction activity are covered by this General Permit. Construction projects that include in-water work that require a

Clean Water Act 404 permit should contact the Regional Board to determine whether a Clean Water Act 401 Certification is necessary; and

f. Concrete mixing for the purpose of construction, in which all mixing activities occur solely within a specific project site, may do so under this General Permit. The project site boundary are those as defined in the project's site-specific SWPPP.

I.J.2. Linear Underground and Overhead Projects subject to this General Permit

a. Underground and overhead facilities typically constructed as linear underground and overhead projects include, but are not limited to, any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid (including water, wastewater for domestic municipal services), liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g., telephone, telegraph, radio, or television messages); and associated ancillary facilities. Construction activities associated with linear underground and overhead projects include, but are not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

b. Water Quality Order 2003-0007-DWQ regulated construction activities associated with small linear underground and overhead projects that resulted in land disturbances greater than one acre, but less than five acres. These projects were considered non-traditional construction projects. Attachment E of this Order now regulates all construction activities from linear underground and overhead projects resulting in land disturbances greater than one acre.

c. All disturbances to the ground must be accounted for and considered additive. The following formula attempts to account for all disturbances from the construction activity, not just the trenching activity itself:

$$\text{Total Disturbed Area} = W_t * L_t + A_p + D_b * N_b + W_r * L_r$$

Where:

- W_t is the width of the disturbance, including trench width, plus the immediate access width;
- L_t is the length of the trench or project pipe;

- A_p is the area where project-related activity occurs (i.e., equipment and material storage, staging, and preparation areas not on paved surfaces, ancillary facility areas);
- D_b is the bore hole diameter multiplied by the immediate access width;
- N_b is the number of bore holes;
- W_r is the new road construction width; and
- L_r is the length of the new road.

This formula illustrates how to account for all disturbances to the ground resulting from the construction activity. Although dischargers are not required to use this exact formula, they must include all disturbances to the ground in their total calculation.

d. The visual inspection requirements set forth in Monitoring and Reporting Requirements in Attachment E are applicable to all linear underground and overhead projects regardless of type.

e. This General Permit's visual inspection requirements apply to linear underground and overhead project Type 1 projects in both populated (developed or paved) and rural (undeveloped or unpaved) settings. In a populated environment, daily closure requirements for an open excavation may be an important element of a SWPPP for stormwater protection and safety plans because open excavations present a safety hazard to both pedestrians and traffic. However, uncovered excavations in rural settings do not pose as significant a threat to safety. Likewise, it makes sense for linear underground and overhead project Type 1 projects in developed settings to return disturbed land back to pre-construction conditions daily, because of incidental non-stormwater discharges in an urban environment and the associated potential for runoff from paved, impermeable surfaces. However, projects in rural settings, are less likely to have impervious surfaces and non-stormwater discharges and may not present the same threat to water quality.

I.J.3. Demolition

a. When a construction project involves demolition or renovation, construction and demolition debris is created. Construction and demolition debris can consist of three types of wastes:

i. Inert or non-hazardous waste;

ii. Hazardous waste as regulated by the United States Environmental Protection Agency under the Resource Conservation and Recovery Act (RCRA); and

iii. Items that contain hazardous components that might be regulated by the state.

b. This General Permit requires best management practices (BMPs) to reduce the exposure of hazardous materials found in older structures from mobilizing in stormwater. Common hazardous materials related to demolition can be found on the U.S. EPA's website[87] and include but are not limited to:

   i. Asbestos-Containing Materials

      State of California Department of Industrial Relations Cal/OSHA has adopted regulations regarding asbestos exposure California Code of Regulations, Title 8, § 1529.

   ii. Mercury Containing Devices

      Many structures utilize devices that contain mercury. Mercury is persistent and toxic to human health and the environment. Mercury containing devices such as thermostats fluorescent lamps shall be isolated, removed and taken to an appropriate disposal facility.

   iii. Lead-Based Paint

      Older structures have a high likelihood of containing lead-based interior and exterior lead-based paint. During the demolition process the lead-based paint can be mobilized and behave like dust. The lead-based paint can be inhaled by workers on the demolition site and tracked off-site causing hazardous exposure to lead to the community. Therefore, it is important to minimize exposure by implementing lead-safe practices during demolition activities.

   iv. Polychlorinated Biphenyls (PCBs) in Caulk

      PCBs have been identified in caulk in many older structures. Protective BMPs and OSHA approved Personal Protective Equipment shall be utilized to prevent the exposure of PCBs to workers and the surrounding environment during and after demolition.

      In order to be in compliant with all PCB TMDLs, Mercury TMDLs and statewide policies, dischargers are required to schedule demolition at times of the year with a low probability of a precipitation event, cover demolished material when activity stops for the day or prior to precipitation, or have a certified individual examine the structure for hazardous materials and mitigate the hazard with a method that prevents the material from discharging off-site.

87 U.S. EPA, Harmful Materials and Residential Demolition, <https://www.epa.gov/large-scale-residential-demolition/harmful-materials-and-residential-demolition> [as of May 20, 2021]

Because of the production ban of PCBs in 1979, this General Permit has requirements for demolition of buildings built prior to January 1, 1980.[88]

I.J.4. Common Plan of Development or Sale

U.S. EPA regulations include the term “common plan of development or sale” to ensure that acreage within a common project does not artificially escape this General Permit’s requirements because construction activities are phased, split among smaller parcels, or completed by different owners or developers. The State Water Board is required to exercise its regulatory discretion in providing a common-sense interpretation of the term as it applies to construction projects and permit coverage. An overbroad interpretation of the term would render meaningless the clear “one acre” federal permitting threshold and would potentially trigger permitting of almost any construction activity that occurs within an area that had previously received area-wide utility or road improvements.

The 2008 U.S. EPA NPDES General Permit for Discharges from Construction Activity (2008 Construction General Permit) provided further clarification on the common plan of development or sale regarding non-contiguous construction activities. Where discrete construction projects within a larger common plan of development or sale are located at least 1/4 mile apart and the area between the projects is not being disturbed, each individual project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline, or utility project that is part of the same “common plan” is not concurrently being disturbed. For example, oil and gas well pads separated by 1/4 mile could be treated as separate projects. However, if the same two well pads and an interconnecting access road were all under construction at the same time, they would generally be considered as part of a single “common plan” for permitting purposes. If a utility company was constructing new trunk lines off an existing transmission line to serve separate residential subdivisions located more than 1/4 mile apart, the two trunk line projects could be considered separate projects.

Construction projects generally receive grading and/or building permits (Local Permits) from local authorities prior to initiating construction activity. These Local Permits spell out the scope of the project, the parcels involved, the type of construction approved, etc. Referring to the Local Permit helps define “common plan of development or sale.” In cases such as tract home development, a Local Permit will include all phases of the construction project including rough grading, utility and road installation, and vertical construction. All construction activities approved in the Local Permit are part of the common plan and must remain under the General Permit until construction is completed. For custom home construction,

88 Geosyntec Consultants for the Bay Area Stormwater Management Association. Integrated Monitoring Report Part B: PCB and Mercury Loads Avoided and Reduced via Stormwater (IMR). 2013.

Local Permits typically only approve vertical construction as the rough grading, utilities, and road improvements were already independently completed under the previous Local Permit. In the case of a custom home site, the homeowner must submit plans and obtain a distinct and separate Local Permit from the local authority in order to proceed. General Permit coverage for an individual homeowner building a custom home on a private lot of less than one acre is not required. Similarly, the installation of a swimming pool, deck, or landscaping that disturbs less than one acre that was not part of any previous Local Permit are not required to obtain General Permit coverage.

The following are several examples of construction activity of less than one acre that would require permit coverage:

a. A landowner receives a building permit(s) to build tract homes on a 100-acre site split into 200 one-third acre parcels, (the remaining acreage consists of streets and parkways) which are sold to individual homeowners as they are completed. The landowner completes and sells all the parcels except for two. Although the remaining two parcels combined are less than one acre, the landowner must continue permit coverage for the two parcels.

b. One of the parcels discussed above is sold to another owner who intends to complete the construction as already approved in the local permit. The new landowner must electronically certify and submit Permit Registration Documents to complete the construction even if the new landowner is required to obtain a separate Local Permit.

c. The landowner in (1) above purchases 50 additional one half-acre parcels adjacent to the original 200-acre project. The landowner seeks a Local Permit (or amendment to existing local permit) to build on 20 parcels while leaving the remaining 30 parcels for future development. The landowner must amend Permit Registration Documents to include the 20 parcels 14 days prior to commencement of construction activity on those parcels.

I.K. Construction Activities Not Covered

I.K.1. Traditional and Linear Construction Activities Not Covered

Construction activities not covered by this General Permit are listed in the Order Section II.B and Section II.D.

I.K.2. Notice of Non-Applicability

Reliance on approved jurisdictional determinations is not allowed in the General Permit for a number of reasons. First, approved jurisdictional determinations delineate the scope of waters of the United States. They do not determine whether an activity results in a discharge to a water of the United States. Second, the scope of waters of the United States is subject to changes based on change of regulations or judicial decisions. Approved jurisdictional determinations are valid

for a discrete number of years, and they may not be up-to-date with respect to implementing the current regulations if there is an intervening change during the duration of the validity of the approved jurisdictional determination. Finally, it is likely that the approved jurisdictional determination was requested by another party and in another context, such as the discharge of dredged or fill material. As such, the findings may not be easily extrapolated.

In 1998, the California Water Code was amended to require entities who are requested by the State Water Board to obtain General Permit coverage, but that have a valid reason to not obtain General Permit coverage, to submit a Notice of Non-Applicability (NONA). (Cal Wat. Code, § 13399.30, subd. (a)(2)).

The State Water Board considered allowing Entities to review United States Army Corp of Engineer approved jurisdictional determinations to evaluate, without a California licensed professional geologist, whether their facility location is within a basin and/or other physical location that is not hydrologically connected to waters of the United States. The State Water Board believes that this process can be difficult in some cases. In addition, there may be areas of the state that are not hydrologically connected to waters of the United States for which there is not a corresponding United States Army Corps of Engineer approved Jurisdictional Determination. Therefore, all “No Discharge” Technical Reports must be signed (wet signature and license number) by a California licensed professional engineer or geologist. In addition, the discharger must obtain a concurrence letter from the Regional Water Board that has jurisdiction over the site location.

I.K.3. Small Construction Erosivity Waiver

The U.S. EPA’s Stormwater Phase II Final Rule provides the option for a Small Construction Rainfall Erosivity waiver. This waiver applies to construction sites between 1 and 5 acres and allows permitting authorities to waive those sites that do not have adverse water quality impacts.

Projects that do not qualify for the Small Construction Rainfall Erosivity waiver include:

a. Projects that are part of a larger common plan of development disturbing more than 5 acres; and/or

b. Projects with construction lasting one year or greater.

Dischargers eligible for the Small Construction Erosivity waiver are exempt from coverage for this General Permit. The discharger must certify and submit to the State Water Board that small construction activity will occur only when the rainfall erosivity factor (“R” factor in the Revised Universal Soil Loss Equation) is less than 5 to obtain the waiver. The period of construction activity begins when the WDID number is issued and ends when the disturbed areas of the project meet the final stabilization conditions in Order Section III.H. The R value is calculated from the construction start date through all phases of construction (initial land disturbance

through final stabilization). Small projects that are part of a larger plan of development (less than 5 combined acres of disturbance) use the earliest start date associated with the plan of development and their estimated time of meeting the final stabilization requirements.

Projects that qualify for the small construction erosivity waiver are not subject to the post-construction standards of this General Permit, but may be subject to existing permitted Phase I or Phase II municipal separate storm sewer system (MS4) post-construction requirements.

A waiver eligibility condition requires the operator to periodically inspect and properly maintain the area until the criteria for final stabilization defined in this General Permit is met. If use of this interim stabilization eligibility condition is relied upon to qualify for the waiver, a signature on the waiver with a certification statement constitutes acceptance of and commitment to complete the final stabilization process. The discharger must apply for a waiver in SMARTS prior to commencing construction activities.

U.S. EPA funded a cooperative agreement with Texas A&M University to develop an online rainfall erosivity calculator. Dischargers can access the calculator from the U.S. EPA's website.[89] Use of the calculator allows the discharger to determine potential eligibility for the rainfall erosivity waiver. It may also be useful in determining the time periods during which construction activity could be waived from General Permit coverage.

I.L. Obtaining and Modifying General Permit Coverage

This General Permit states the Legally Responsible Person (LRP) or a person legally authorized to sign and certify on behalf of the LRP is responsible for obtaining General Permit coverage. The LRP must electronically submit[90] Permit Registration Documents prior to commencement of construction activities in the Stormwater Multiple Application Report Tracking System (SMARTS). Permit Registration Documents consist of:

- A Notice of Intent;
- A Risk Assessment;
- Post-Construction Calculations (when applicable);
- A Site Map;
- A SWPPP; and

89 U.S. EPA, Rainfall Erosivity Factor Calculator for Small Construction Sites, <https://lew.epa.gov/> [as of May 20, 2021]

90 Each signatory (LRP or DAR) must have an electronic authorization form on file with the State Water Board for each organization they represent in SMARTS.

- The application fee.

A Waste Discharge Identification number (WDID) will automatically be emailed to the LRP once these components have been submitted and are deemed complete. Failure to obtain coverage under this General Permit for stormwater discharges to waters of the United States is a violation of the Clean Water Act and the California Water Code.

The LRP is typically the person who possesses the title of the land, easement, or leasehold interest of the estate upon which the construction activities will occur for the regulated site. The LRP for linear underground and overhead projects is typically the person authorized to make management decisions of the utility company, municipality, or other public or private company or agency that owns or operates the linear underground and overhead project.

The Duly Authorized Representative is a person who has legal authority to sign, certify, and electronically submit Permit Registration Documents and Notices of Termination on behalf of the Legally Responsible Person.

It is expected that as the stormwater program develops, the Regional Water Boards may issue general or individual permits containing more specific provisions. If this occurs, this General Permit no longer regulates those dischargers obtaining coverage under those general or individual permits.

Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.

Annual Reports must be submitted by projects that are enrolled under this General Permit for more than 90 days in a reporting period. The Annual Reports shall be submitted electronically in SMARTS. Annual Reports are due to the State Water Board by September 1st of each year with a July 1st through June 30th reporting period.

The application requirements clearly identify the responsible parties, locations, and scope of operations of dischargers covered by this General Permit and documents the discharger's knowledge of the General Permit's requirements. Regional Water Boards will enter their inspection and enforcement data into SMARTS.

Coverage under this General Permit remains in effect until a Notice of Termination is submitted in SMARTS and approved by the applicable Regional Water Board where the project is located. The discharger is responsible for any missed or outstanding invoices if the Regional Water Board denies the Notice of Termination. For outstanding invoices, a complete Notice of Termination must be received by the Regional Water Board 90 days from the original invoice date in order to cancel the invoice. The invoice is deemed valid and payable if a complete Notice of Termination is received after 90 days.

This General Permit allows a discharger to terminate portions of a construction project if those portions have been sold to another owner. This General Permit is not transferable, so the new owner has the responsibility to obtain coverage, update the Stormwater Pollution Prevention Plan (SWPPP), and comply with General Permit requirements. The seller must notify the new owner about their responsibilities concerning this General Permit and must notify the State Water Board by submitting the new owner's name, address, and phone number on the Change of Information form for the termination to be processed. The seller must also disclose the state of construction, if construction activity is ongoing, or if the post-construction requirements are completed. The new owner for ongoing construction activity after the change of ownership is not exempt from this General Permit's SWPPP requirements and must submit new Permit Registration Documents within 30 days of the date of change of ownership. The new owner is expected to review and update the existing SWPPP to ensure it is appropriate for the construction activity being undertaken.[91]

The Legally Responsible Person is always ultimately responsible for project compliance. This individual must certify the Permit Registration Documents and will be the recipient of any Notices of Violations or Administrative Civil Liabilities (fines) for the project.

The current annual fees are included in the Water Code fee schedule[92] and are based on total disturbed area (acres) of the construction project. Projects continuing from the previous permit into this General Permit will pay the annual fees based on their current billing cycle.

Consistent with the 2022 U.S. EPA NPDES General Permit for Discharges from Construction Activity, this General Permit requires the discharger to post a sign or other General Permit coverage notice at a location viewable and legible by the public from a safe, publicly accessible location. This General Permit requires the posting of the project's unique WDID number, waiver identification number, and site and project contact information. If posting in a publicly accessible location is not possible, the discharger must make the site-specific WDID readily available upon request.

91 The SWPPP must be amended, or a new SWPPP developed by the discharger's QSD if not already in compliance with this General Permit's SWPPP requirements in the Order for Linear Underground and Overhead Projects.

92 State Water Resources Control Board, NPDES Storm Water Fees, <https://waterboards.ca.gov/resources/fees/water_quality/#stormwater> [as of May 20, 2021]

I.M. Notice of Termination Final Stabilization

This General Permit is consistent with the 2022 U.S. EPA NPDES General Permit for Discharges from Construction Activity which requires the following for Notice of Termination final stabilization:

I.M.1. Establish uniform, perennial cover of vegetation[93] (i.e., evenly distributed, without large bare areas) to provide 70 percent or more of the cover that is provided by permanent vegetation in local undisturbed areas; and/or

I.M.2. Implement permanent non-vegetative stabilization measures to provide effective cover of any areas of exposed soil.

I.M.3. Exceptions:

a. Arid, semi-arid, and drought-stricken areas. Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the cover that is provided by permanent vegetation in local undisturbed areas within three years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied that provide cover for at least three years without active maintenance.

b. Disturbed areas on agricultural land that are restored to their preconstruction agricultural use.

c. Areas that need to remain disturbed (e.g., racetracks, animal corrals, baseball diamonds, etc.). In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remains disturbed, and only the minimum area needed remains disturbed (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials).

I.N. Discharge Prohibitions

This General Permit authorizes the discharge of stormwater to surface waters from construction activities that result in the disturbance of one or more acres of land, provided that the discharger satisfies all General Permit conditions. This General Permit prohibits the discharge of pollutants other than stormwater and non-stormwater discharges authorized by this General Permit or another NPDES permit. This General Permit also prohibits all discharges which contain a hazardous substance in excess of reportable quantities established in 40 Code of Federal Regulations §§ 117.3 and 302.4, unless a separate NPDES permit has been issued to regulate those discharges. In addition, this General Permit incorporates discharge prohibitions contained in water quality control plans, as implemented by the nine

93 Applications of products where stabilization is dependent on vegetative growth (e.g., hydroseed) does not meet final stabilization criteria if vegetative growth is not achieved.

Regional Water Boards. Discharges to Areas of Special Biological Significance (ASBS) are prohibited unless covered by an exception that the State Water Board has approved.

Non-stormwater discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Non-stormwater discharges may contribute significant pollutant loads to receiving waters. Measures to control spills, leakage, and dumping, and to prevent illicit connections during construction must be addressed through structural as well as non-structural BMPs. The State Water Board recognizes, however, that certain non-stormwater discharges may be necessary for the completion of construction projects. Authorized non-stormwater discharges may include those from de-chlorinated potable water sources such as: fire hydrant flushing, irrigation of vegetative erosion control measures, pipe flushing and testing, water to control dust, uncontaminated ground water dewatering, and other discharges not subject to a separate general NPDES permit adopted by a region. Therefore, this General Permit authorizes such discharges provided they meet the following conditions:

These authorized non-stormwater discharges must:

1. Comply with BMPs as described in the SWPPP;
2. Filter or treat, using appropriate technology, all dewatering discharges from sedimentation basins;
3. Meet the numeric action levels for pH and turbidity; and
4. Not cause or contribute to a violation of water quality standards.

Additionally, authorized non-stormwater discharges must not be used to clean up failed or inadequate construction or post-construction BMPs designed to keep materials on-site. This General Permit prohibits the discharge of stormwater that causes or threatens to cause pollution or nuisance. Dewatering is also discussed in Section I.B.3.b.iii above.

I.O. Technology and Water Quality Based Effluent Limitations for All Types of Discharges

I.O.1. Technology-Based Effluent Limitations

NPDES permits for stormwater discharges associated with construction activity must meet all applicable provisions of §§ 301 and 402 of the Clean Water Act. These provisions require controls of pollutant discharges that utilize best available technology economically achievable (BAT) for toxic pollutants and non-conventional pollutants and best conventional pollutant control technology (BCT) for conventional pollutants. Additionally, these provisions require controls of pollutant discharges to reduce pollutants and any more stringent controls necessary to meet water quality standards. The U.S. EPA has already established such limitations, known as effluent limitation guidelines, for some industrial

categories. The State Water Board implemented the effluent limitation guidelines and standards for the construction and development point source category into this General Permit as discussed in Section I.B.3 above. In instances where there are no effluent limitation guidelines, the permit writer is to use best professional judgment to establish discharger requirements using BAT and BCT technology. This General Permit contains narrative effluent limitations, technology-based numeric effluent limitations for active treatment systems and BMP-based, narrative, and numeric water quality-based effluent limitations for Total Maximum Daily Loads (TMDL) waste load allocation implementation.

The previous permit, as originally adopted by the State Water Board on September 2, 2009, contained numeric effluent limitations for pH (within the range of 6.0 and 9.0 pH units) and turbidity (500 Nephelometric Turbidity Units (NTU)) that applied only to Risk Level 3 and linear underground and overhead project Type 3 construction sites. The California Building Industry Association, the Building Industry Legal Defense Foundation, and the California Business Properties Association (petitioners) challenged the previous permit in *California Building Industry Association et al. v. State Water Resources Control Board*. The Superior Court ruled in favor of the State Water Board on almost all of the issues the petitioners raised, but the Superior Court invalidated the numeric effluent limitations for pH and turbidity for Risk Level 3 and linear underground and overhead project Type 3 sites because it determined that the State Water Board did not have sufficient BMP performance data to support those numeric effluent limitations. As a result of the Superior Court's writ of mandamus, the numeric effluent limitations for pH and turbidity were removed from the previous permit, except for active treatment systems. In addition, the previous permit required Risk Level 3 and linear underground and overhead project Type 3 dischargers with discharges directly to surface waters to conduct receiving water monitoring if directed by Water Boards whenever their effluent exceeds specified receiving water monitoring triggers. The receiving water monitoring triggers were established at the same levels as the previous numeric effluent limitations (effluent pH outside the range of 6.0 and 9.0 pH units or turbidity exceeding 500 NTU). In restoring the receiving water monitoring requirements, the State Water Board determined that it was appropriate to require receiving water monitoring at the request of the Water Boards for these types of sites with discharges directly to surface waters that exceeded the receiving water monitoring triggers under any precipitation event scenarios because these sites represent the highest threat to receiving water quality.

This General Permit includes receiving water monitoring requirements for Risk Level 3 and linear underground and overhead project Type 3 with discharges directly to surface water. An exceedance of a receiving water monitoring trigger is not a violation of this General Permit.

BAT and BCT technologies include passive systems such as conventional runoff and sediment control and treatment systems such as coagulation or flocculation using sand filtration, when appropriate. Such technologies allow for effective treatment of soil particles less 0.02 mm (medium silt) in diameter. This General Permit requires the discharger to install structural controls, as necessary, such as erosion and sediment controls that meet BAT and BCT to achieve compliance with water quality standards. These effluent limitations constitute compliance with the requirements of the Clean Water Act.

Because this General Permit is an NPDES permit, there is no legal requirement to address the factors set forth in Water Code §§ 13241 and 13263, unless the permit is more stringent than what federal law requires. (See *City of Burbank v. State Water Resources Control Bd*. (2005) 35 Cal.4th 613, 618, 627.) None of the requirements in this General Permit are more stringent than the minimum federal requirements, which include technology-based requirements achieving BAT and BCT and strict compliance with water quality standards. The inclusion of numeric effluent limitations in the permit for active treatment systems does not cause this General Permit to be more stringent than current federal law. Numeric effluent limitations and best management practices are simply two different methods of achieving the same federal requirement: strict compliance with state water quality standards. Federal law authorizes both narrative and numeric effluent limitations to meet state water quality standards. The use of numeric effluent limitations to achieve compliance with water quality standards is not a more stringent requirement than the use of BMPs. (State Water Board Order No. WQ 2006-0012 (Boeing).) Accordingly, the State Water Board does not need to take into account the factors in Water Code §§ 13241 and 13263.

The State Water Board has concluded that the establishment of BAT and BCT will not create or aggravate other environmental problems through increases in air pollution, solid waste generation, or energy consumption. While there may be a slight increase in non-water quality impacts due to the implementation of additional monitoring or the construction of additional BMPs, these impacts will be negligible in comparison with the construction activities taking place on-site and would be justified by the water quality benefits associated with compliance.

a. pH Receiving Water Monitoring Trigger

   The minimum standard control methods for pH in runoff requires the use of preventive measures such as avoiding concrete pours during rainy weather, covering concrete and directing flow away from fresh concrete if a pour occurs during rain, covering scrap drywall and stucco materials when stored outside and potentially exposed to rain, and other housekeeping measures to control potential contaminants. If necessary, pH-impaired stormwater from construction sites can be treated in a filter, settling pond, or basin, with additional natural or chemical treatment required to meet pH limits set forth in this General Permit.

The basin or pond acts as a collection point and holds stormwater for a sufficient period for the contaminants to be settled out, either naturally or artificially, and allows any additional treatment to take place. The State Water Board considers these techniques to be equivalent to BCT. The State Water Board used best professional judgement in determining the pH concentration discharge limitations.

The chosen trigger was established by calculating three standard deviations above and below the mean pH of runoff from highway construction sites[94] in California. Proper implementation of BMPs should result in discharges that are within the range of 6.0 to 9.0 pH units.

b. Turbidity Receiving Water Monitoring Trigger

The turbidity receiving water monitoring trigger of 500 NTU is a performance-based trigger and was developed using three different analyses aimed at finding the appropriate threshold to set the performance-based limit to ensure environmental protection, effluent quality, and cost-effectiveness. The analyses fell into three, main types: (1) an ecoregion-specific dataset developed by Simon et. al. (2004); (2) Statewide Regional Water Quality Control Board enforcement data; and (3) published, peer-reviewed studies and reports on in-situ performance of best management practices in terms of erosion and sediment control on active construction sites.

A 1:3 relationship between turbidity (expressed as NTU) and suspended sediment concentration (expressed as mg/L) is assumed based on a review of suspended sediment and turbidity data from three gauges used in the USGS National Water Quality Assessment Program:

USGS 11074000 SANTA ANA R BL PRADO DAM CA

USGS 11447650 SACRAMENTO R A FREEPORT CA

USGS 11303500 SAN JOAQUIN R NR VERNALIS CA

The receiving water monitoring trigger represents staff determination that the trigger value is the most practicable based on available data. The turbidity receiving water monitoring trigger represents a bridge between the narrative effluent limitations and receiving water limitations. State Water Board staff analyzed construction site discharge information (monitoring data, estimates) and receiving water monitoring information to support this receiving water monitoring trigger.

94 California Department of Transportation, Caltrans Construction Sites Runoff Characterization Study (September 2002) <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/ctsw-rt-03-065-a11y.pdf> [as of May 20, 2021]

Compliance with this value does not necessarily represent compliance with either the narrative effluent limitations (as enforced through the BAT and BCT standard) or the receiving water limitations since the turbidity receiving water monitoring trigger represents an appropriate threshold level expected at a site. In the San Diego region, some inland surface waters have a receiving water objective for turbidity equal to 20 NTU. A discharge up to, but not exceeding, the turbidity receiving water monitoring trigger of 500 NTU may still cause or contribute to the exceedance of the 20 NTU standard. Most of the waters of the State are protected by turbidity objectives based on background conditions.

Table 3 – Regional Water Board Basin Plans, Water Quality Objectives for Turbidity

Regional Water Board	WQ Objective	Background/Natural Turbidity	Maximum Increase
1	Based on background	All levels	20 percent
2	Based on background	> 50 NTU	10 percent
3	Based on background	0-50 JTU 50-100 JTU > 100 JTU	20 percent 10 JTU 10 percent
4	Based on background	0-50 NTU > 50 NTU	20 percent 10 percent
5	Based on background	0-5 NTU 5-50 NTU 50-100 NTU > 100 NTU	1 NTU 20 percent 10 NTU 10 percent
6	Based on background	All levels	10 percent
7	Based on background	N/A	N/A
8	Based on background	0-50 NTU 50-100 NTU > 100 NTU	20 percent 10 NTU 10 percent
9	Inland Surface Waters, 20 NTU All others, based on background	0-50 NTU 50-100 NTU > 100 NTU	20 percent 10 NTU 10 percent

Table 4 shows the suspended sediment concentrations at the 1.5-year flow recurrence interval for the 12 ecoregions in California from Simon et. al (2004).

Table 4 – Results of Ecoregion Analysis

Ecoregion	Percent of California Land Area	Median Suspended Sediment Concentration (mg/L)
1	9.1	874
4	0.2	120
5	8.8	35.6
6	20.7	1530
7	7.7	122
8	3.0	47.4
9	9.4	284
13	5.2	143
14	21.7	5150
78	8.1	581
80	2.4	199
81	3.7	503

The area-weighted average for the suspended sediment concentration is 1633 mg/L.

If a 1:3 relationship between turbidity and suspended sediment is assumed, the median turbidity is 544 NTU.

The following Table 5 is composed of turbidity readings measured in NTUs from administrative civil liability actions for construction sites from 2003 - 2009. This data was derived from the complete listing of construction-related administrative civil liabilities (ACLs) for the six-year period. All administrative civil liabilities were reviewed and those that included turbidimeter readings at the point of stormwater discharge were selected for this dataset.

Table 5 – Administrative Civil Liabilities (ACL) Sampling Data taken by Regional Water Board Staff

WDID#	Region	Discharger	Turbidity (NTU)
5S34C331884	5S	Bradshaw Interceptor Section 6B	1800
5S05C325110	5S	Bridalwood Subdivision	1670
5S48C336297	5S	Cheyenne at Browns Valley	1629
5R32C314271	5R	Grizzly Ranch Construction	1400
6A090406008	6T	El Dorado County Department of Transportation, Angora Creek	97.4
5S03C346861	5S	TML Development, LLC	1600
6A31C325917	6T	Northstar Village	See Subdata Set

Table 6 – Subdata Set Turbidity for Point of Stormwater Runoff Discharge at Northstar Village

Date	Turbidity (NTU)	Location
10/5/2006	900	Middle Martis Creek
11/2/2006	190	Middle Martis Creek
01/04/2007	36	West Fork, West Martis Creek
02/08/2007	180	Middle Martis Creek
02/09/2007	130	Middle Martis Creek
02/09/2007	290	Middle Martis Creek
02/09/2007	100	West Fork, West Martis Creek
02/10/2007	28	Middle Martis Creek
02/10/2007	23	Middle Martis Creek
02/10/2007	32	Middle Martis Creek
02/10/2007	12	Middle Martis Creek
02/10/2007	60	West Fork, West Martis Creek
02/10/2007	34	West Fork, West Martis Creek

A 95 percent confidence interval for mean turbidity in an administrative civil liability order was constructed. The data set used was a small sample size, so the 500 NTU (the value derived as the receiving water monitoring trigger for this General Permit) needed to be verified as a possible population mean. In this case, the population refers to a hypothetical population of turbidity measurements of which our sample of 20 represents. A t-distribution was assumed due to the small sample size:

Mean: 512.23 NTU

Standard Deviation: 686.85

Margin of Error: 31.45

Confide Interval: 190.78 NTU (Low), 833.68 NTU (High)

Based on a constructed 95 percent confidence interval, an administrative civil liability order turbidity measurement will be between 190.78 – 833.68 NTU. 500 NTU falls within this range. Using the same data set, a small-sample hypothesis test was also performed to test if the administrative civil liability turbidity data set contains enough information to cast doubt on choosing a 500 NTU as a mean. 500 NTU was again chosen due to its proposed use as an acceptable value. The test was carried out using a 95 percent confidence interval. Results indicated that the administrative civil liability turbidity data set does not contain significant sample evidence to reject the claim of 500 NTU as an acceptable mean for the administrative civil liability turbidity population.

There are few published, peer-reviewed studies and reports on in-situ performance of best management practices in terms of erosion and sediment control on active construction sites. The most often cited study is a report titled,

"Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control"[95]. The primary author, Dr. Horner states the following in a comment letter to the State Water Board summarizing this report:

"The most effective erosion control product was wood fiber mulch applied at two different rates along with a bonding agent and grass seed in sufficient time before the tests to achieve germination. Plots treated in this way reduced influent turbidity by more than 97 percent and discharged effluent exhibiting mean and maximum turbidity values of 21 and 73 NTU, respectively. Some other mulch and blanket materials performed nearly as well. These tests demonstrated the control ability of widely available BMPs over a very broad range of erosion potential."

Other technologies studied in this report produced effluent quality at or near 100 NTU. It is the best professional judgement of the State Water Board staff that erosion control is preferred and that technology performance in a controlled study showing effluent quality directly leaving a BMP is always easier and cheaper to control than effluent being discharged from the project (edge of property, etc.).

To summarize, the analysis showed that: (1) results of the Simon et. al dataset reveals turbidity values in background receiving water in California's ecoregions range from 16 NTU to 1716 NTU (with a mean of 544 NTU); (2) based on a constructed 95 percent confidence interval, construction sites will be subject to administrative civil liability (ACL) when their turbidity measurement falls between 190.78 – 833.68 NTU; and (3) sites with highly controlled discharges employing and maintaining good erosion control practices can discharge effluent from the BMP with turbidity values less than 100 NTU. State Water Board staff has determined, using its best professional judgement, that it is most cost effective to set the receiving water monitoring trigger for turbidity at 500 NTU.

I.O.2. Determining Compliance with Effluent Standards

a. Numeric Action Levels

This General Permit contains technology based numeric action levels for pH and turbidity, and requirements for effluent monitoring at all Risk Level 2 and 3, and linear underground and overhead project Type 2 and 3 sites. The numeric action levels are: a pH numeric action level of 6.5 to 8.5, and a turbidity numeric action level of 250 Nephelometric Turbidity Units (NTUs). Additionally, this General Permit sets a turbidity numeric action level for receiving water

95 Horner, Guedry, and Kortenhof, Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control (1990) <https://wsdot.wa.gov/research/reports/fullreports/200.1.pdf> [as of April 28, 2022]

monitoring of 500 NTU. Numeric action levels are essentially numeric benchmark values for certain parameters that, if exceeded in effluent sampling, trigger the discharger to take actions.

The primary purpose of numeric action levels is to assist dischargers in evaluating the effectiveness of their on-site measures. Construction sites need to employ many different systems that must work together to achieve compliance with the permit's requirements. The numeric action levels chosen should indicate whether the systems are working as intended. This General Permit requires dischargers with numeric action level exceedances to implement additional, alternative, or improved BMPs and revise their SWPPPs accordingly to either prevent pollutants in stormwater and authorized non-stormwater discharges from being discharged, or to substantially reduce the pollutants to levels consistently below the numeric action levels. An exceedance of a numeric action level does not constitute a violation of this General Permit, however, failure to implement any applicable requirement of this General Permit, or additional BMPs or improved BMPs to adequately prevent future numeric action level exceedances, and/or not reporting any numeric action level exceedance through SMARTS is a violation of this General Permit. Dischargers are required to electronically self-report any discharges that exceed numeric action levels or numeric effluent limitations. Multiple exceedances of a numeric action level or failure to report numeric action level exceedances through SMARTS can be cause for the discharger to implement an active treatment system.

Another purpose of numeric action levels is to provide information regarding construction activities and water quality impacts. This data will provide the Water Boards and the rest of the stormwater community with more information about levels and types of pollutants present in runoff and how effective the dischargers' BMPs are at reducing pollutants in effluent. The State Water Board also hopes to learn more about the linkage between effluent and receiving water quality. In addition, these requirements will provide information on the mechanisms needed to establish compliance monitoring programs at construction sites in future permit deliberations.

i. pH

The chosen limits were established by calculating one standard deviation above and below the mean pH of runoff from highway construction sites in California. Proper implementation of BMPs should result in discharges that are within the range of 6.5 to 8.5 pH units.

The Caltrans study included 33 highway construction sites throughout California over a period of four years, which included 120 storm events. All of these sites had BMPs in place that would be generally implemented at all types of construction sites in California.

The Surface Water Ambient Monitoring Program (SWAMP) has a Guidance Compendium for Watershed Monitoring and Assessment. Sections 3.1.4 and 3.1.5 of this Compendium contain guidance for pH and turbidity sampling.[96]

ii. Turbidity

The State Water Board's staff used their best professional judgement to develop a numeric action level that can be used as a learning tool to help dischargers improve their site controls, and to provide meaningful information on the effectiveness of stormwater controls. A statewide turbidity numeric action level has been set at 250 NTU.

The Surface Water Ambient Monitoring Program (SWAMP) has a Guidance Compendium for Watershed Monitoring and Assessment. Sections 3.1.4 and 3.1.5 of this Compendium contain guidance for pH and turbidity sampling.

I.O.3. Receiving Water Limitations

Construction activities that cause or contribute to an exceedance of water quality objectives or standards must be addressed. The dynamic nature of construction activity gives the discharger the ability to quickly identify and monitor the source of the exceedances. This is because when stormwater mobilizes sediment, it provides visual cues of erosion, where corrective actions should take place, and how effective they are once implemented.

This General Permit requires that stormwater, dewatering, and authorized non-stormwater discharges eliminate the discharge of pollutants that cause or contribute to an exceedance of any applicable water quality objectives or standards. The sampling and analysis monitoring requirements in this General Permit will help determine whether BMPs installed and maintained are preventing pollutants in discharges from the construction site that may cause or contribute to an exceedance of water quality objectives or standards.

Water quality objectives or standards consist of designated beneficial uses of surface waters and the adoption of ambient criteria necessary to protect those uses. The ambient criteria are termed "water quality objectives" when adopted by the Water Boards. There is a risk that stormwater runoff from construction sites containing pollutants could enter surface waters and cause or contribute to an exceedance of water quality standards. For that reason, dischargers should be aware of the applicable water quality standards in their receiving waters. The best method to ensure compliance with receiving water limitations is to implement

96 A SWAMP Field Methods Course training CD is also available for the public at <www.waterboards.ca.gov/water_issues/programs/swamp/cdrom.html> or please contact stormwater@waterboards.ca.gov to request a copy. [as of May 20, 2021]

BMPs that prevent pollutants from contacting stormwater or leaving the construction site in runoff.

California water quality standards are published in the Basin Plans adopted by each Regional Water Board, the California Toxics Rule (CTR), the National Toxics Rule (NTR), and Statewide Water Board Plans, for example, the California Ocean Plan.

Dischargers can determine the applicable water quality standards by contacting Regional Water Board staff or by consulting one of the following sources. The actual Basin Plans that contain the water quality standards can be viewed at the website of the appropriate Regional Water Board[97], the State Water Board site for statewide plans,[98] or the U.S. EPA regulations for the NTR and CTR (40 Code of Federal Regulations §§ 131.36-38). Basin Plans and statewide plans are also available by mail from the appropriate Regional Water Board or the State Water Board. The U.S. EPA regulations are available on their website.[99]

I.O.4. Water Quality Based Effluent Limitations for Construction Stormwater: TMDLs and Waste Load Allocations

This General Permit implements Clean Water Act § 303(d) impaired water body(ies) with Regional Water Board or U.S. EPA adopted TMDLs identifying sources regulated by this General Permit. The TMDLs in Attachment H include the specific waste load allocation for this activity and source. Dischargers are required to comply with any applicable TMDL requirements in this General Permit (see Attachment H and Section I.W of this Fact Sheet for additional TMDL applicability information).

Responsible Dischargers that are assigned TMDL-related numeric action levels or numeric effluent limitations are required to collect samples in accordance with the non-visible sampling requirements in Attachments D and E and compare all analytical results to the applicable numeric action levels or numeric effluent limitations specified in Attachment H of this General Permit.

I.P. Training Qualifications and Requirements

To ensure that the preparation, implementation, and oversight of the SWPPP is sufficient for effective pollution prevention, the Qualified SWPPP Developer and

97 State Water Resources Control Board, RWQCB Directory, <https://www.waterboards.ca.gov/about_us/contact_us/rwqcbs_directory.html> [as of May 20, 2021]

98 State Water Resources Control Board, Plans and Policies, <https://www.waterboards.ca.gov/plans_policies/> [as of May 20, 2021]

99 U.S. EPA Website <https://www.epa.gov/> [as of May 20, 2021]

Qualified SWPPP Practitioner are responsible for creating, revising, overseeing, and implementing the SWPPP.

I.Q. Sampling, Monitoring, Reporting, and Record Keeping for Linear Underground and Overhead Projects and Traditional Construction Monitoring Requirements

I.Q.1. Introduction

This General Permit requires visual monitoring at all sites and effluent water quality monitoring at all Risk Level 2 and 3 and linear underground and overhead project Type 2 and 3 sites (also some Type 1 and Risk Level 1 sites). Receiving water monitoring may be required by the Regional Water Board at some Risk Level 3 and Type 3 sites as described below. All sites are required to submit the sampling results, inspection records, and Annual Reports specified in this General Permit, which contain specific documentation collected over the reporting period.

I.Q.2. Visual

Visual inspections of stormwater discharges, dewatering discharges, authorized non-stormwater discharges, and unauthorized non-stormwater discharges are required for all sites subject to this General Permit. This General Permit requires dischargers to implement corrective actions at the site to address deficiencies identified during the visual monitoring.

All dischargers are required to conduct visual inspections as described in General Permit Attachment's D or E. This General Permit requires the discharger to visually-inspect a site for indications of pollutants in stormwater runoff, erosion, failed BMPs, and improper BMP installation. Each discharge location and drainage area require an inspection for the presence of (or indications such as erosion, pollutant mobilization, or other potential threat to human health and the environment) unauthorized and authorized non-stormwater discharges and their sources. Dischargers must conduct pre, during, and post-precipitation event inspections to: (1) identify adequacy of BMP design, implementation, and effectiveness, (2) identify any necessary additional BMPs, and (3) revise the SWPPP on-site and in SMARTS accordingly. Dischargers must maintain on-site records of all visual observations, personnel performing the observations, observation dates, weather conditions, locations observed, and corrective actions taken in response to the observations.

This General Permit requires visual monitoring for precipitation events which result in the discharge of water from the site. Sites are encouraged to use size catch basins to retain the first flush of a precipitation event, which is consistent with BAT and BCT. The size of a precipitation event cannot be predicted so an adequate trigger for a pre-precipitation event visual inspection is 50 percent or greater probability of producing precipitation based on the National Weather Service Forecast Office of the National Oceanic and Atmospheric Administration (NOAA).

General Permit Attachments D and E list the minimum criteria for an inspection checklist. Dischargers may develop their own inspection forms or may use a Water Board-developed form if one is available.

Some visual inspections may be delegated by the QSP to an individual that has received training as described in the discharger's site personnel roles and responsibilities in this General Permit.

I.Q.3. Non-Visible Pollutant Monitoring

This General Permit requires that all dischargers develop a sampling and analysis strategy for monitoring pollutants that are not visually detectable in stormwater. Some monitoring may be delegated by the QSP to an individual that has received training as described in the discharger's site personnel roles and responsibilities in this General Permit. Monitoring for non-visible pollutants is required at any site when the exposure of construction materials occurs and where a potential discharge can cause or contribute to an exceedance of a water quality objective or standard. Pollutants found in materials used in large quantities at construction sites throughout California and exposed throughout the rainy season, such as cement, fly ash, and other recycled materials or by-products of combustion are a significant concern for construction discharges. The water quality standards that apply to these materials will depend on their composition. Some of the more common stormwater pollutants from construction activity are not CTR pollutants. Examples of construction non-visible pollutants[100] include, but are not limited to, bacteria and viruses, fertilizers or nutrients, herbicides, greases; lubricants; oils, metals, synthetic chemicals, and pesticides.

a. Bacteria and Viruses

Bacteria and viruses are common stormwater contaminants. Construction site sources include, but are not limited to, animal excrement, waste management, and sanitary facilities. High levels of indicator bacteria in stormwater have led to the closure of beaches, lakes, and rivers to contact recreation such as swimming.

b. Fertilizers and Nutrients

Fertilizers and nutrients are common stormwater contaminants. Construction site sources include, but are not limited to, landscape fertilization, these nutrients can result in excessive vegetation or algae growth in natural water systems or be toxic to aquatic life, resulting in impaired beneficial uses.

100 Section P.1.b adapted from the CASQA Construction BMP Handbook, p. 1-6, 1-7, 1-10.

c. Herbicides and Pesticides

Herbicides and pesticides (including fungicides, rodenticides, and insecticides) have been detected repeatedly in stormwater at levels toxic to certain organisms, even when pesticides have been applied in accordance with label instructions. The washing of construction equipment used for noxious weed removal can also spread invasive species[101]. Construction site sources include, but are not limited to, noxious weed and vegetation management, pest control, and vector control.

d. Greases, Lubricants, Oils

Greases, lubricants, and oils include a wide array of hydrocarbon compounds and other synthetic materials, some of which are toxic to aquatic organisms at low concentrations. Construction site sources include, but are not limited to, equipment spills and leaks from delivery; storage; use, equipment and vehicle drive train; suspension; hydraulic system cleaning and maintenance, material storage, on-site staff parking areas, paving operations, and waste disposal.

e. Metals

Metals including, but not limited to, cadmium, copper, chromium, iron, lead, nickel, and zinc are commonly found in stormwater and are of concern because some are toxic to aquatic organisms, can bioaccumulate (accumulate to toxic levels in aquatic animals such as fish), and have the potential to contaminate drinking water supplies. Construction site sources, include but are not limited to, naturally occurring metals associated with earth disturbance, gravel materials, construction materials, equipment maintenance, equipment fluids, paving operations, and welding and fabrication activities.

f. Synthetic Chemicals

Synthetic chemicals may be found in stormwater and can be toxic in low concentrations. Construction site sources include, but are not limited to, batteries, construction materials, chemical fire suppression, chemical storage, equipment and vehicle fueling (also related to Section I.Q.3.d above), paving operations, and waste management.

Many of the above sources can result in construction stormwater discharges containing pollutants. For example, high pH can result from improperly maintained treatment systems, cement and gypsum, and wash waters. Salts can also be found

101 Center for Environmental Excellence by AASHTO, Chapter 4 Construction Practices for Environmental Stewardship 4.11 Vegetation Management in Construction (2019) <https://www.epa.gov/sites/default/files/2015-11/documents/25-25-4-_fr.pdf> [as of April 28, 2022]

in construction site materials, including but not limited to, fertilizers and nutrients, herbicides and pesticides, soil treatments, and surfactants.

Some of these constituents are subject to Statewide Policy, water quality control plans, or Attachment H's TMDL Water Quality Based Effluent Limitations. Dischargers are encouraged to discuss these standards with Water Board staff and other stormwater quality professionals.

The most effective way to reduce or minimize the non-visible sampling and analysis requirements is to reduce and manage exposure of construction materials, activities, and equipment to precipitation and/or stormwater runoff. Materials or activities that are not exposed do not have the potential to enter stormwater runoff, and therefore receiving water sampling is not required. Preventing contact between stormwater and construction materials, equipment, or materials or preventing the runoff are the most important BMPs at any construction site.

Preventing or eliminating the exposure of pollutants at construction sites is not always possible. Some materials and activities, such as soil amendments or earth moving equipment, are designed to be used in a manner that will result in exposure to stormwater. In these cases, it is important to make sure that these materials and activities are applied and operated according to the manufacturer's instructions and at a time when pollutants are less likely to be washed away. Other construction materials can be exposed when storage, waste disposal, or the application of the material is done in a manner not protective of water quality. Representative sampling is required for these situations, unless there is capture and containment of all stormwater that has been exposed. In cases where construction materials may be exposed to stormwater, but the stormwater is contained and is not allowed to run off the site, sampling will only be required when inspections show that the containment failed or is breached, resulting in potential exposure or discharge to receiving waters.

This General Permit requires the discharger to conduct a pollutant source assessment to develop a list of potential pollutants based on a review of site or project potential sources, which will include construction activities, equipment materials, soil amendments, soil treatments, and historic contamination at the site. The discharger must review existing environmental and real estate documentation to determine the potential pollutants that could be present on the construction site as a result of past land use activities.

Possible reference materials for previously existing pollution and past land uses:

i. Environmental Assessments;

ii. Initial Studies;

iii. Phase 1 Assessments prepared for property transfers;

iv. Environmental Impact Reports or Environmental Impact Statements prepared under the requirements of the National Environmental Policy Act or the California Environmental Quality Act; and

v. Available soil chemical analysis results.

I.Q.4. Effluent Monitoring

Consistent with 40 Code of Federal Regulations, § 122.44, all linear underground and overhead project Type 2 and 3 and Risk Level 2 and 3 dischargers (also some Type 1 and Risk Level 1 sites) must perform sampling and analysis of effluent discharges to characterize discharges associated with construction activity from the entire area disturbed by the project. Dischargers must collect samples of stored or contained stormwater that is discharged during or subsequent to a precipitation event. Some monitoring may be delegated by the QSP to an individual that has received training as described in the discharger's site personnel roles and responsibilities in this General Permit.

This General Permit requires stormwater runoff sampling for pH and turbidity for all Risk Level 2, linear underground and overhead project Type 2, Risk Level 3, and linear underground and overhead project Type 3 sites. Sampling is required at all locations where stormwater, dewatering, and/or authorized non-stormwater associated with construction activity is discharged off-site or enters any on-site waters of the United States (e.g., a creek running through a site). Dischargers are required to identify all sampling locations in the SWPPP and site map and sampling is only required when a discharge occurs. Attachments D and E of this General Permit require specific sampling requirements and non-sampling justifications.

This General Permit contains sampling, analysis, and monitoring requirements for pH and turbidity. Sampling of non-visible pollutants identified in the pollutant source assessment is required when the materials or chemicals have the potential to cause or contribute to an exceedance of a water quality standard (e.g., BMP breach, failure, malfunction, or leak or spill observed during a visual inspection).

This General Permit requires that all dischargers maintain a paper or electronic copy of all required records for three years from the date generated or date submitted, whichever is later. These records shall be available at the site until a Notice of Termination is approved by the Regional Water Board. Linear underground and overhead project documents may be retained in a crew member's vehicle and made available upon request.

a. Traditional Construction Monitoring Requirements

A summary of the monitoring and reporting requirements is found in Table 7 and 8 below. Dischargers are also required to report and retain records in accordance with this General Permit's Order and Attachment D requirements.

Table 7 – Required Monitoring Elements for Risk Levels

Risk Level	Visual	Non-Visible Pollutants	Effluent	Receiving Water
Risk Level 1	Required	As needed	Where applicable	Not required
Risk Level 2	Required	As needed	pH, turbidity	Not required
Risk Level 3	Required	As needed	pH, turbidity	For discharges directly to surface waters if: 1) pH or turbidity Receiving Water Monitoring Trigger exceeded; and 2) upon Regional Water Board direction

Table 8 – Stormwater Effluent Monitoring Requirements by Risk Level

Level	Frequency	Effluent Monitoring
Risk Level 1	When non-visible pollutants, identified in the SWPPP or otherwise known to be on site, may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.	Applicable non-visible pollutant parameters
Risk Level 2 and 3	When non-visible pollutants, identified in the SWPPP or otherwise known to be on site, may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.	Applicable non-visible pollutant parameters
Risk Level 2 and 3	One sample per discharge location per day of a precipitation event characterizing discharges associated with construction activity from the entire project disturbed area.	pH, turbidity, and applicable non-visible pollutant parameters

b. Linear Construction Monitoring and Sampling Requirements

Attachment E establishes minimum monitoring and reporting requirements for all linear underground and overhead projects and the specific monitoring requirements depending on project complexity and risk to water quality. The monitoring requirements for Type 1 linear underground and overhead project are less than Type 2 and 3 projects because Type 1 projects have a lower potential to impact water quality.

This General Permit requires the discharger to prepare a monitoring program prior to the start of construction and immediately implement the program at the start of construction for linear underground and overhead projects. The monitoring program must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. Dischargers are also

required to report and retain records in accordance with this General Permit's Order and Attachment E requirements.

Table 9 – Require Monitoring Elements for Linear Underground and Overhead Project Types

Risk Level	Visual	Non-Visible Pollutants	Effluent	Receiving Water
Type 1	Required	As needed	Where applicable	Not required
Type 2	Required	As needed	pH, turbidity	Not required
Type 3	Required	As needed	pH, turbidity	For discharges directly to receiving waters if: 1) pH or turbidity Receiving Water Monitoring Trigger exceed; and 2) upon Regional Water Board direction.

i. Type 1 Linear Underground and Overhead Project Monitoring Requirements

This General Permit requires a discharger to conduct daily visual inspections of Type 1 linear underground and overhead projects during site operating hours while construction activities are occurring. Inspections are to be conducted by qualified personnel and can be conducted in conjunction with other daily activities. Inspections are conducted to ensure the BMPs are adequate, maintained, and in place at the end of the construction day. The required SWPPP revisions (when appropriate) should be based on the results of the daily inspections and reported so the site General Permit implementation is currently reflected. Inspections can be discontinued in non-active construction areas where soil disturbing activities have been completed and final stabilization has been achieved (e.g., trench has been paved, substructures have been installed, and successful final vegetative cover or other stabilization criteria have been met).

A discharger implementing a monitoring program for Type 1 linear underground and overhead projects is required to implement temporary and permanent stabilization BMPs after active construction is completed. Inspection activities are required until adequate permanent stabilization has been established and will continue in areas where re-vegetation is chosen until minimum vegetative coverage has been established. The required photograph requirements taken during site inspections are for verification of requirements and are submitted through SMARTS.

This General Permit also includes the minimum criteria required for an inspection checklist. Dischargers may develop their own inspection forms or may contact the Water Board for an inspection form, if one is available.

ii. Type 2 and 3 Linear Underground and Overhead Project Monitoring Requirements

This General Permit requires the discharger to conduct daily visual inspections of Type 2 and 3 linear underground and overhead projects during site operating hours when construction activities are occurring. Inspections are to be conducted by qualified personnel and can be in conjunction with other daily activities.

All Type 2 and 3 linear underground and overhead project dischargers are required to conduct inspections by qualified personnel of the construction site during site operating hours prior to all anticipated precipitation events, during, and after actual precipitation events. The discharger is required to conduct inspections during site operating hours for each 24-hour period during extended precipitation events. Inspections can be discontinued in non-active construction areas where soil disturbing activities have been completed and final stabilization has been achieved (e.g., trench has been paved, substructures installed, and successful vegetative cover or other stabilization criteria have been met).

The goals of these inspections are: (1) to identify areas contributing to a stormwater discharge; (2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate, properly installed, and functioning in accordance with the terms of this General Permit; and (3) to determine if additional control practices or corrective maintenance activities are needed. Equipment, materials, and workers must be available for rapid response to failures and emergencies. All corrective BMP maintenance is to be performed as soon as possible, depending upon worker safety.

All dischargers are required to develop and implement a monitoring program for inspecting Type 2 and 3 linear underground and overhead projects that require temporary and permanent stabilization BMPs after active construction is completed. The inspections will be conducted to ensure the BMPs are adequate and maintained and will continue until adequate permanent stabilization has been established in areas where revegetation is chosen until minimum vegetative coverage has been established.

This General Permit also requires a log of inspections conducted before, during, and after the precipitation event(s) be maintained in the SWPPP. The log will provide the date and time of the inspection and who conducted the inspection. Photographs must be taken during site inspections and submitted through SMARTS.

This General Permit's Attachment E lists minimum criteria required for an inspection checklist. Dischargers may develop their own inspection forms or may contact the Water Board for an inspection form, if one is available.

iii. Sampling Requirements for all Linear Underground and Overhead Project Types

Linear underground and overhead projects are subject to sampling and analysis requirements for visible pollutants (i.e., sedimentation/siltation, turbidity, pH) and for non-visible pollutants.

1) Sampling for non-visible pollutants is required for Type 1, 2, and 3 linear underground and overhead projects.

Non-visible pollutant monitoring is required for pollutants associated with construction sites and activities that (1) are not visually detectable in stormwater discharges, (2) are known or should be known to occur on the construction site, and (3) could cause or contribute to an exceedance of water quality standard or objectives in the site's receiving waters. Sample collection for non-visible pollutants are required only: (1) during a precipitation event when pollutants associated with construction activities may be discharged with stormwater runoff in the event of a BMP breach, failure, malfunction, leak or spill, (2) identified in the discharge and is from construction activities and/or materials, and (3) when the discharger has failed to adequately clean the area of material and pollutants. Failure to implement appropriate BMPs will trigger the same sampling requirements as those required in (1) above, or when the discharger has failed to implement appropriate BMPs prior to the next precipitation event.

It is not anticipated that all linear underground and overhead projects will be required to collect samples for pollutants not visually detected in runoff due to the nature and character of the construction site and activities as previously described in this Fact Sheet. Most linear underground and overhead projects are constructed in urban areas with public access (e.g., existing roadways, road shoulders, parking areas, etc.). This raises a concern regarding the potential contribution of pollutants from vehicle use and/or from normal activities of the public (e.g., vehicle washing, landscape fertilization, pest spraying, etc.) in runoff from the project site. Since the dischargers are not necessarily the landowners of the project area and are not able to control the presence of these pollutants in the stormwater that runs through their projects, it is not the intent of this General Permit to require dischargers to sample for these pollutants unless they are generated specifically from the linear underground and overhead project materials and/or activities. This General Permit does not require the discharger to sample for these

types of pollutants except where the discharger has on-site materials or activities containing or specifically generating these pollutants and when the conditions described above occur.

2) Regional Water Board-Required Additional Monitoring Requirements

The Regional Water Board can require, in writing, additional monitoring requirements in this General Permit under Clean Water Act authority and specific authorities listed in this General Permit's Order and Attachment E. Additional monitoring requirements include, but are not limited to, requirements specified in an enforcement order, additional sampling parameters, frequency, methods, practices, and/or reporting (for stormwater, dewatering, and/or non-stormwater) based upon site-specific analysis.

3) Receiving Water Monitoring

This General Permit protects the receiving water's beneficial uses from construction site pollutants. Risk Level 3 and linear underground and overhead project Type 3 site discharges subject to the receiving water monitoring triggers with: (1) receiving water monitoring trigger exceedances defined in this General Permit, (2) discharges are directly into receiving waters, and (3) the discharger is directed to monitor by the Water Boards are required to monitor the upstream and downstream receiving water(s) for turbidity and pH (if applicable). These requirements were modified to make it clear that they do not apply to discharges to an MS4 that later discharges into a surface water.

Table 10 – Receiving Water Monitoring Requirements

Level or Type	Receiving Water Monitoring Triggers
Risk Level 1 and Linear Underground and Overhead Project Type 1	Not applicable/required
Risk Level 2 and Linear Underground and Overhead Project Type 2	Not applicable/required
Risk Level 3 and Linear Underground and Overhead Project Type 3	For discharges directly to surface waters if: 1) pH or turbidity Receiving Water Monitoring Trigger exceeded; and 2) upon Regional Water Board direction.

I.Q.5. Reporting Requirements

a. Reporting Numeric Effluent Limitation Violations (Water Quality Based Corrective Actions or Numeric Effluent Limitation Violation Report)

All discharges subject to TMDL-specific numeric effluent limitations requirements must electronically submit all precipitation event sampling results

to the Water Boards through SMARTS no later than 10 days after receiving the field analysis results or analytical laboratory results. The purpose of the electronic certification and submittal of the Water Quality Based Corrective Actions or Numeric Effluent Limitation Violation Report is to: (1) allow public access to General Permit-required reporting, (2) document the discharger's compliance actions, and (3) notify the Water Boards of the exceedance so that they can determine whether any follow-up (e.g., inspection, enforcement) is necessary to bring the site into compliance.

Responsible Dischargers with a water quality exceedance are in violation of this General Permit and must additionally submit the Water Quality Based Corrective Actions or Numeric Effluent Limitation Violation Report containing:

- The analytical method(s), reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit are to be reported as "less than the method detection limit or <MDL");
- The date, place, and time of sampling;
- Any visual observation (inspections);
- Any measurements, including precipitation; and
- A description of the current BMPs associated with the effluent sample that exceeded the numeric effluent limitation and any proposed corrective actions taken.

b. Reporting Numeric Action Level Exceedances (Numeric Action Level Exceedance Report)

All Risk Level 2 and 3 and linear underground and overhead project Type 2 and 3 dischargers must electronically submit all precipitation event sampling results for the pH and turbidity numeric action levels, through SMARTS, no later than 10 days after the conclusion of the precipitation event. All Risk Level 2 and 3 and linear underground and overhead project Type 2 and 3 dischargers must electronically submit all precipitation event sampling results for TMDL-related numeric action levels, through SMARTS, no later than 10 days after receiving the analytical laboratory results. In the event that any effluent sample exceeds an applicable numeric action level, a Regional Water Board or its delegate may request (in writing) that the Risk Level 2 or 3 and linear underground and overhead project Type 2 or 3 dischargers submit and certify a Numeric Action Level Exceedance Report, through SMARTS, within 30 days of receiving the written request.

In the event that an applicable pH, turbidity or TMDL-specific numeric action level has been exceeded, the required reporting contains:

- The analytical method(s), reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit are to be reported as "less than the method detection limit or <MDL");
- The date, place, and time of sampling;
- Any visual observation (inspections);
- Any measurements, including precipitation; and
- A description of the current BMPs associated with the effluent sample that exceeded the numeric action level and any proposed corrective actions taken.

c. Analytical Sample Reporting

All dischargers are required to certify and submit analytical monitoring results in SMARTS using the monitoring ad hoc report (a separate ad hoc monitoring report is needed for each precipitation event). Electronically certified and submitted sampling and analysis results are required to include an upload of the original laboratory reports and chain of custody forms.

d. Annual Report

All dischargers must prepare and electronically certify and submit an Annual Report no later than September 1st of each year using SMARTS including the specified information described in this General Permit's Order and any additional necessary site compliance information such as a summary of all corrective actions taken during the reporting period, or the identification of any compliance activities or corrective actions that were not implemented.

I.Q.6. Record Keeping

According to 40 Code of Federal Regulations §§ 122.21(p) and 122.41(j), the discharger is required to retain paper or electronic copies of all records required by this General Permit for a period of at least three years from the date generated or the date submitted to the Water Boards. A discharger must retain records for a period beyond three years if directed by Regional Water Board.

I.R. Risk Determination

A site Risk Level calculation is the estimated potential for sediment transport and risk to the receiving water. This General Permit contains calculation requirements to determine a project's Risk Level 1, 2 and 3, or a linear underground and overhead projects Type 1, 2, and 3 as described below. Construction industry-accepted sediment erosion models and Water Boards-provided or site-specific receiving water

risk models are used to determine pre-construction project and post-construction project risks for all the project's construction phases.

I.R.1. Traditional Construction Projects

a. Overall Risk Determination

There are two major requirements related to site planning and risk determination in this General Permit. The project's overall risk is broken up into two elements: (1) project sediment risk (the relative amount of sediment that can be discharged, given the project and location details) and (2) receiving water risk (the risk sediment discharges pose to the receiving waters).

i. Project Sediment Risk:

The Revised Universal Soil Loss Equation (RUSLE) is used to calculate watershed sediment risk. The RUSLE was originally developed to calculate sheet and rill erosion rate in tons/acre/project duration. It is consistent with the original intent of the RUSLE to not introduce a project size threshold to develop risk categories expressed on tons/project duration.

The Regional Board has the authority to question any aspect of the sediment risk calculation, including the R factor used in determining Watershed Sediment Risk. The RUSLE2 computer program can also be used to calculate the R factor and in many cases yields more accurate values than those generated from the EPA Erosivity Calculator.

Project Sediment Risk is determined by multiplying the R, K, and LS factors from the Revised Universal Soil Loss Equation (RUSLE) to obtain an estimate of project-related bare ground soil loss expressed in tons/acre. The RUSLE equation is as follows:

$$A = (R)(K)(LS)(C)(P)$$

Where:

A is the rate of sheet and rill erosion

R is the rainfall-runoff erosivity factor

K is the soil erodibility factor

LS is the length-slope factor

C is the cover factor (erosion controls)

P is the management operations and support practices (sediment controls)

The C and P factors are given values of 1.0 to simulate bare ground conditions.

There is a map option[102] and a manual calculation option for determining soil loss. For the map option, the R factor for the project is calculated using the online calculator.[103] To determine soil loss in tons per acre, the discharger multiplies the R factor times the value for K times LS.

For the manual calculation option, the R factor for the project is calculated using the online calculator. The K and LS factors are determined using Attachment D.1.

Soil loss of less than 15 tons/acre is considered **low** sediment risk.

Soil loss between 15 and 75 tons/acre is **medium** sediment risk.

Soil loss over 75 tons/acre is considered **high** sediment risk.

The soil loss values and risk categories were obtained from mean and standard deviation RKLS values from the U.S. EPA EMAP program. High risk is the mean RKLS value plus two standard deviations. Low risk is the mean RKLS value minus two standard deviations

ii. Receiving Water Risk:

Receiving water risk is based on whether a project drains to a water body or watershed that is sediment-sensitive. A sediment-sensitive water body or watershed is either:

- On the most recent 303(d) list for water bodies impaired for sediment; or
- Has the beneficial uses of COLD, SPAWN, and MIGRATORY.

A project that meets at least one of the two criteria has a high receiving water risk. A list of sediment-sensitive water bodies is posted on the State Water Board's website[104] and included in Attachment D.1. An interactive map of 303(d) listed water bodies in California is available on the State Board's website.[105]

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102 The guidance Geographic Information System Risk maps will be provided electronically on the State Water Board's website prior to the effective date of this General Permit.

103 U.S. EPA, Rainfall Erosivity Factor Calculator for Small Construction Sites, <https://lew.epa.gov/> [as of May 20, 2021]

104 State Water Board, Surface Water Quality Assessment Webpage, <https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired> [as of May 20, 2021]

105 State Water Board, 303(d) Integrated Report <https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html> [as of June 21, 2022]

b. Effluent Standards

All dischargers are subject to the narrative effluent limitations specified in the General Permit. The narrative effluent limitations require stormwater discharges associated with construction activity to meet all applicable provisions of §§ 301 and 402 of the Clean Water Act. These provisions require controls of pollutant discharges that utilize BAT and BCT to reduce pollutants and any more stringent controls necessary to meet water quality standards.

Risk Level 2 dischargers that pose a medium risk to water quality are subject to numeric action levels for pH and turbidity, which were established based on best professional judgement. Risk Level 3 dischargers that pose a high risk to water quality are subject to numeric action levels for pH and turbidity, which were established based on best professional judgement.

c. Effluent Monitoring

Effluent monitoring is required for Risk Level 2 and 3 and linear underground and overhead project Type 2 and 3 project sites as described in the Order, Attachments D and E. Effluent monitoring results must be certified and submitted electronically through SMARTS.

d. Good Housekeeping

Proper handling and management of construction materials can help minimize threats to water quality. The discharger must consider good housekeeping measures for construction materials, waste management, vehicle storage and maintenance, landscape materials, and potential pollutant sources. Examples include conducting an inventory of products used, implementing proper storage and containment, and properly cleaning all leaks from equipment and vehicles.

e. Non-Stormwater Management

This General Permit's Order defines the specific authorized non-stormwater discharges allowed and necessary prohibitions on other non-stormwater discharges. Non-stormwater discharges directly connected to receiving waters or the storm drain system have the potential to negatively impact water quality. The discharger must implement measures to control all non-stormwater discharges (e.g., properly washing vehicles or equipment in contained areas, cleaning streets, and minimizing irrigation runoff) during construction, and construction-associated dewatering activities. This General Permit includes specific construction site dewatering provisions designed to eliminate or reduce pollutant impacts on receiving waters from these activities.

f. Erosion Control

The best way to minimize the risk associated with erosion and sedimentation during construction is to disturb as little of the land surface as possible by fitting the development to the terrain. Little grading is necessary and erosion potential

is lower when development is tailored to natural land contours. Other effective erosion control measures include preserving existing vegetation where feasible, limiting disturbance, timing disturbances around reduced precipitation conditions, and stabilizing and re-vegetating disturbed areas as soon as possible after grading or construction activities. Particular attention must be paid to large, mass-graded sites where the potential for soil exposure to the erosive effects of rainfall, snow melt, and wind is great and where there is potential for significant sediment discharge from the site to surface waters. Temporary soil stabilization can be the single most important factor in reducing construction site erosion. The discharger is required to consider measures such as: covering disturbed areas with mulch, temporary seeding and vegetation, soil stabilizers, non-toxic binders, fiber rolls or blankets, and permanent seeding. These erosion control measures are only examples of what should be considered and do not preclude the use of new or innovative approaches currently available or being developed. Erosion control BMPs should be the primary means of preventing stormwater contamination, and sediment control techniques should be used to capture any soil that becomes eroded.[106]

Areas that convey stormwater run-off are required to be appropriately armored against in channel erosion. A California licensed professional engineer may need to provide system design and/or calculations to control the erosion in the conveyance of stormwater (drainage channels).

g. Establishing Vegetation

Planting a site may be necessary during the construction phase to establish vegetation prior to termination of the project. Planted vegetation should match surrounding pre-existing native vegetation. It is expected that local climatic conditions, timing, soil types, soil compaction, topography, and nutrients need to be evaluated to ensure seed germination and plant establishment. The employment of healthy soil[107] principles may provide additional guidance on vegetative establishment in dry conditions (e.g., in arid and semi-arid climates dischargers should apply seed prior to the application of mulch). Dischargers may consider the advantages and limitations for each project area in regard to seed planting method (direct drilling, broadcasting, and/or hydraulic applications).

106 U.S. EPA, Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites (May 2007), <https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf> [as of May 20, 2021]

107 California Department of Food and Agriculture, Healthy Soils Program Website <https://www.cdfa.ca.gov/oefi/healthysoils/> [as of May 20, 2021]

h. Sediment Control

Sediment control BMPs should be the secondary means of preventing polluted stormwater discharges. Sediment control techniques recover some of the soil that becomes eroded when erosion control techniques are ineffective. This General Permit requires dischargers to consider perimeter control measures such as installing silt fences or placing straw wattles below slopes. These sediment control measures are only examples of what should be considered and should not preclude new or innovative approaches currently available or being developed.

Additional requirements for the effective implementation of erosion and sediment controls year-round are imposed on Risk Level and Type 2 and 3 dischargers because these sites pose a higher risk to water quality. This General Permit authorizes the Regional Water Boards to require Risk Level 3 and linear underground and overhead project Type 3 dischargers to implement additional site-specific sediment control requirements when the implementation of other erosion or sediment controls are found to be inadequately protecting the receiving waters.

This General Permit requires the use of wildlife friendly BMPs that minimize wildlife entrapment and sets a prohibition on the discharge of trash and debris. Wildlife entrapment can be minimized by providing the means for wildlife to escape dig sites that are deeper than one meter and storing materials, like netting and tubing, in locations that are inaccessible to wildlife. Dischargers should use biodegradable wattles containing no plastic that can remain on a site when possible. Wattles containing plastic netting (including plastic specified as photo-degradable) become “trash” in the environment and/or a trap for wildlife. These are also considered “construction materials and waste” and must be disposed of properly per this General Permit.

i. Run-on and Runoff Control

Inappropriate management of run-on and runoff can result in excessive physical and chemical impacts to receiving waters from sediment and increased flows. The discharger is required to manage all run-on and runoff from a project site. Examples include installing berms and other temporary run-on and runoff diversions. Dischargers are responsible for commingled run-on (onto the site or within the site) from areas not related to the site’s construction activities and the pollutants contained in the commingled discharge.

j. Snow and Ice melt

Construction sites that are affected by snow and ice conditions shall use BMPs to avoid sedimentation migration and erosion from occurring.

k. Inspection, Maintenance, and Repair

All measures must be periodically inspected, maintained, and repaired to ensure that receiving water quality is protected. Frequent inspections coupled with thorough documentation and timely repair is necessary to ensure that all measures are functioning as intended.

I.R.2. Linear Underground and Overhead Projects

a. Linear Underground and Overhead Risk Determination

Linear underground and overhead projects vary in complexity and water quality concerns based on project type. This General Permit has varying application requirements based on the project's risk to water quality. Factors that lead to the characterization of the project include location, sediment risk, and receiving water risk.

Linear projects are separated into project types based on the location and complexity of a project area or project segment/section area. Linear underground and overhead projects have been categorized into three project types as follows:

i. Type 1 linear projects are those construction projects where:

1) 70 percent or more of the construction activity occurs on a paved surface and where areas disturbed during construction will be returned to preconstruction conditions or equivalent protection established at the end of the construction activities for the day; or

2) Greater than 30 percent of construction activities occur within the non-paved shoulders or land immediately adjacent to paved surfaces, or where construction occurs on unpaved improved roads, including their shoulders or land immediately adjacent to them where:

a) Areas disturbed during construction will be returned to pre-construction conditions or equivalent protection established at the end of the construction activities for the day to minimize the potential for erosion and sediment deposition; and

b) Areas where established vegetation was disturbed during construction will be stabilized and re-vegetated by the end of project. When required, adequate temporary stabilization BMPs will be installed and maintained until vegetation is established to meet minimum cover final stabilization requirements established in this General Permit.

Type 1 linear underground and overhead projects typically do not have a high potential to impact stormwater quality because: (1) these construction activities are not typically conducted during precipitation events, (2) these

projects are normally constructed over a short period of time[108], minimizing the duration that pollutants could potentially be exposed to precipitation, and (3) disturbed soils such as those from trench excavation are required to be hauled away, backfilled into the trench, and/or covered (e.g., metal plates, pavement, plastic covers over spoil piles) at the end of the site operating hours for the construction day.

Type 1 linear underground and overhead projects are determined during the risk assessment found in Attachment E.1 to be 1) low sediment risk and low receiving water risk; 2) low sediment risk and medium receiving water risk; and 3) medium sediment risk and low receiving water risk.

This General Permit requires the discharger to ensure a SWPPP is developed by a Qualified SWPPP Developer for these construction activities that is specific to linear underground and overhead project type, location, and characteristics.

ii. Type 2 Linear Underground and Overhead Projects

Type 2 linear underground and overhead projects are determined to have a combination of High, Medium, and Low project sediment risk along with High, Medium, and Low receiving water risk. Type 2 linear underground and overhead projects are typically constructed over a short period of time like Type 1 projects, however, Type 2 projects have a higher potential to impact water quality because they:

1) Typically occur outside urban or developed areas;
2) Have larger areas of soil disturbance that are not closed or restored at the end of the day;
3) May have on-site stockpiles of soil, spoil, and other materials;
4) Cross or occur in close proximity to a wide variety of sensitive resources that may include, but are not limited to, steep topography and/or water bodies; and
5) Have larger areas of disturbed soils that may be exposed for a longer time interval before final stabilization, cleanup, and/or reclamation occurs.

This General Permit requires the discharger to ensure a SWPPP is developed by a Qualified SWPPP Developer and is implemented these site-specific construction activities for the project type, location, and characteristics.

108 Short period of time refers to a project duration of weeks to months, but typically less than one year in duration.

iii. Type 3 Linear Underground and Overhead Projects

Type 3 linear underground and overhead projects are determined to have a combination of High and Medium project sediment risk along with High and Medium receiving water risk. Similar to Type 2 projects, Type 3 projects have a higher potential to impact water quality because they:

1) Typically occur outside urban and developed areas;
2) Have larger areas of soil disturbance that are not closed or restored at the end of the day;
3) May have on-site stockpiles of soil, spoil, and other materials;
4) Cross or occur in close proximity to a wide variety of sensitive resources that may include, but are not limited to, steep topography and/or water bodies; and
5) Have larger areas of disturbed soils that may be exposed for a longer time interval before final stabilization, cleanup, and/or reclamation occurs.

This General Permit requires the discharger to ensure a SWPPP is developed by a Qualified SWPPP Developer and is implemented these site-specific construction activities for the project type, location, and characteristics.

b. Programmatic Permitting for Linear Underground and Overhead Projects

i. Regional Programmatic Permit Coverage:

Regionwide programmatic permit coverage allows a linear underground and overhead project discharger to submit one Notice of Intent for multiple non-contiguous linear underground and overhead projects, if the projects: 1) are located within one Regional Water Board office boundary, 2) are a group of projects of similar scopes with common construction activities, and 3) have the same Legally Responsible Person. Thus, a linear underground and overhead project discharger may be issued a single waste discharge identification number (WDID) for each group of projects (e.g., electrical transmission, gas line transmission, wildfire prevention, etc.) that meet the above criteria.

A linear underground and overhead project discharger opting to obtain regional programmatic permit coverage must submit a common SWPPP with its application that addresses <u>all</u> the construction activities and pollutant sources relevant to the project scope. The linear underground and overhead project discharger must also submit a Linear Construction Activity Notification in SMARTS for each individual project with site-specific information per Attachment E.2, allowing the Regional Water Board to

enforce individual projects per the requirements in this Order. Each project will share a WDID and will be assigned a WDID extension to identify and track the individual projects. Each individual project is terminated separately through a Linear Construction Termination Notification in SMARTS, pending Regional Water Board staff approval.

Regionwide programmatic permitting was requested by utility stakeholders to improve administrative efficiency related to construction stormwater permitting, in part by training contractors on a common SWPPP that can be implemented on a site-specific basis.

ii. Statewide Programmatic Permit Coverage for Mandated Installation of Broadband Utilities:

Statewide programmatic permit coverage allows a linear underground and overhead project discharger responsible in deploying construction activities to comply with sections 7 – 13 of the Governor's Executive Order N-73-20, or amendments thereto, to submit one Notice of Intent for multiple non-contiguous linear broadband underground and overhead projects, if the projects:

- Are located throughout two or more Regional Water Board boundaries,
- Are a group of projects for broadband utility installation outside of a construction project otherwise regulated by this General Order, and
- Have the same Legally Responsible Person.

The discharger will be issued a single waste discharge identification number (WDID) for each group of projects that meet the above criteria.

A linear underground and overhead project discharger opting to obtain statewide programmatic permit coverage must submit:

- A common SWPPP with its application that addresses all the construction activities and pollutant sources relevant to the project scope, and
- Project-specific additional pollution prevention measures to the common SWPPP, as applicable,

A Linear Construction Activity Notification in SMARTS for each individual project with site-specific and project-specific information per Attachment E.2.

Each individual project will share a common WDID and will be assigned a unique WDID extension corresponding to the Regional Water Board

jurisdiction and the project risk level. The unique project-specific extension number will allow the corresponding Regional Water Board to enforce individual projects per the requirements in this Order specific to the project risk level. Each individual project is terminated separately through the Linear Construction Termination Notification process in SMARTS, and the Notice of Termination process of this General Permit.

Statewide programmatic permitting was requested by the California Department of Transportation, the statewide agency primarily responsible for the construction activity that fully deploys Governor's Executive Order N-73-20, or amendments thereto, by July 2026. To improve internal project efficiencies to comply with the executive order by July 2026, the Department has reduced its standard design-to-construction procedures from several months to two-to-three weeks. The permit enrollment administrative efficiency provided by statewide programmatic permitting will allow the Department, and other linear project dischargers deploying the executive order, to obtain permit coverage for individual projects, compatible with shortened design-to construction timelines, without submitting repetitive application information for similar projects within different regions.

c. Linear Underground and Overhead Project Effluent Standards

All linear underground and overhead projects are subject to the narrative effluent limitations specified in the General Permit. Type 2 and Type 3 projects are subject to technology-based numeric action levels for pH and turbidity.

d. Linear Underground and Overhead Project Good Housekeeping

Improper use and handling of construction materials could potentially cause a threat to water quality. All linear underground and overhead project dischargers must comply with a minimum set of Good Housekeeping measures specified in Attachment E of this General Permit to ensure proper construction material site management.

e. Linear Underground and Overhead Project Non-Stormwater Management

All linear underground and overhead project dischargers must comply with the Non-Stormwater Management measures specified in Attachment E and Order of this General Permit in order to ensure control of all non-stormwater discharges during construction.

f. Linear Underground and Overhead Project Erosion Control

This General Permit requires all linear underground and overhead projects dischargers to implement effective wind erosion control measures, and soil cover for inactive areas. Type 3 linear underground and overhead projects

posing a higher risk to water quality are additionally required to ensure the post-construction soil loss is equivalent to or less than the pre-construction levels.

g. Linear Underground and Overhead Project Sediment Control

All linear underground and overhead project dischargers must comply with the general Sediment Control measures specified in Attachment E or this General Permit in order to ensure control and containment of all sediment discharges. Additional requirements for sediment controls are imposed on Type 2 and 3 linear underground and overhead projects due to their higher risk to water quality.

h. Linear Underground and Overhead Projects Run-on and Runoff Control

Discharges originating outside of a project's perimeter and flowing onto the property can adversely affect the quantity and quality of discharges originating from a project site. All linear underground and overhead projects must comply with the run-on and runoff control measures specified in Attachment E of this General Permit in order to ensure proper management of run-on and runoff. Due to the lower risk of impacting water quality, Type 1 linear underground and overhead projects are not required to implement run-on and runoff controls unless deemed necessary by the discharger. Examples include installing berms and other temporary run-on and runoff diversions. Dischargers are responsible for commingled run-on (onto the site or within the site) from areas not related to the site's construction activities and the pollutants contained in the commingled discharge.

i. Linear Underground and Overhead Projects Inspection, Maintenance, and Repair

Proper inspection, maintenance, and repair activities are important to ensure the effectiveness of on-site measures to protect receiving water quality. All linear underground and overhead project dischargers are required to comply with the inspection, maintenance, and repair requirements specified in Attachment E of this General Permit in order to ensure that these activities are adequately performed.

I.S. Active Treatment System[109] Requirements

I.S.1. General

The requirements in Attachment F only apply when an active treatment system is implemented on a project site. An active treatment system is defined in this General Permit as "a controlled treatment system that employs chemical

109 An active treatment system is a treatment system that employs chemical coagulation, chemical flocculation, or electrocoagulation in order to reduce turbidity caused by fine suspended sediment.

coagulation, chemical flocculation, or electrocoagulation to aid in the reduction of turbidity caused by fine suspended sediment."

The active treatment system is designed to treat and reduce the turbidity level of construction stormwater discharges to meet water quality standards and the requirements of this General Permit at the flowrate required in the Active Treatment System Plans. The specified active treatment system flowrate is designed to dewater the basin within 10 hours. Typical equipment and materials may include pumps, manifolds, flocculants, filter bags, sand media filters, and other items designed to remove suspended materials from construction stormwater. The discharger is required to ensure the operators of the active treatment system are adequately trained and the appropriate professional designed the Active Treatment System Plan.

Bonded-fiber matrices, hydromulches, spray tackifiers, and other land-applied products used to stabilize soil are not considered active treatment nor passive treatment, but rather a form of erosion control.

The use of an active treatment system may be necessary when: (1) traditional erosion and sediment controls do not effectively control accelerated erosion at the construction site, (2) the construction site stormwater discharges may cause or contribute to an exceedance of a water quality standard, and/or (3) site constraints (e.g., very steep or long slope lengths,[110] clay, highly erosive soils) inhibit the ability to construct a correctly sized sediment basin.

The active treatment system industry in California started in the mid-1990s and is relatively young, however many developers use these systems to treat stormwater discharges from their construction sites. The active treatment system requirements in this General Permit are based on those in place for small wastewater treatment systems, active treatment system regulations from the Central Valley Regional Water Quality Control Board (September 2005 memorandum "2005/2006 Rainy Season – Monitoring Requirements for Stormwater Treatment Systems that Utilize Chemical Additives to Enhance Sedimentation"), the State of Washington's Department of Ecology Construction Stormwater Program, and recent advances in technology and knowledge of coagulant performance and aquatic safety.

The effective design of an active treatment system requires a detailed survey and analysis of site conditions. Properly planned and implemented active treatment system provide high-quality discharges and prevent significant impacts to surface water quality, even under extreme environmental conditions.

110 Pitt, R., S. Clark, and D. Lake. 2006. Construction Site Erosion and Sediment Controls: Planning, Design, and Performance. DEStech Publications. Lancaster, PA. 370pp.

These systems can be very effective in reducing the sediment in stormwater runoff, but the systems that use additives or polymers to enhance sedimentation also pose a potential risk to water quality (e.g., inadequate training, operational failure, equipment failure, additive or polymer release). The State Water Board is concerned about the potential acute and chronic impacts that the polymers and other chemical additives may have on fish and aquatic organisms if released in sufficient quantities or concentrations. The literature and anecdotal evidence of polymer releases causing aquatic toxicity in California supports this concern.[111] For example, cationic polymers have been shown to bind with the negatively charged gills of fish, resulting in mechanical suffocation.[112] This General Permit establishes residual polymer monitoring and toxicity testing requirements due to the potential toxicity impacts associated with the release of additives or polymers into receiving waters from construction sites utilizing an active treatment system.

The primary treatment process in an active treatment system is coagulation and flocculation. Active treatment system operate on the principle that the added coagulant is bound to suspended sediment, forming floc, which is gravitationally settled in tanks or a basin, or removed by sand filters. A typical installation utilizes an injection pump upstream from the clarifier tank, basin, or sand filters, which is electronically metered to both flow rate and suspended solids level of the influent, assuring a constant dose. The coagulant mixes and reacts with the influent, forming a dense floc. The floc may be removed by gravitational setting in a clarifier tank or basin, or by filtration. Water from the clarifier tank, basin, or sand filters may be routed through cartridge(s) and/or bag filters for final polishing. Vendor-specific systems use various methods of dose control, sediment and floc removal, filtration, etc., that are detailed in project-specific documentation. The particular coagulant and/or flocculant used for a given project is determined based on the site water chemistry because the coagulants are specific in their reactions with various types of sediments. Appropriate selection of dosage must be carefully matched to the characteristics of each site. This General Permit prohibits the operation of an active treatment system or the batch storage to cause an uncontrolled release of chemicals used during the flocculation, coagulation, and/or filtration process for suspended sediment particles because these chemicals can negatively affect the beneficial uses of receiving waters and/or degrade water quality (e.g., acute and chronic toxicity).

Active treatment system are operated in two differing modes, batch or flow-through. Batch treatment can be defined as Pump-Treat-Hold-Test-Release. In

111 RomØen, K., B. Thu, and Ø. Evensen. 2002. Immersion delivery of plasmid DNA II. A study of the potentials of chitosan-based delivery system in rainbow trout (Onchorhynchus mykiss) fry. Journal of Controlled Release 85: 215-225.

112 Bullock, G., V. Blazer, S. Tsukuda, and S. Summerfelt. 2000. Toxicity of acidified chitosan for cultured rainbow trout (Oncorhynchus mykiss). Aquaculture 185:273-280.

batch treatment, water is held in a basin or tank, and is not discharged until treatment is complete. Batch treatment involves holding or recirculating the treated water in a holding basin or tank(s) until treatment is complete or the basin or storage tank(s) is full. In flow-through treatment, water is pumped into the active treatment system directly from the runoff collection system or stormwater holding pond, where it is treated and filtered as it flows through the system and is then directly discharged. “Flow-through treatment” is also referred to as “continuous treatment.”

I.S.2. Active Treatment System Effluent Standards

This General Permit requires discharges of stormwater associated with construction activity that undergo active treatment to comply with special operational and effluent limitations to ensure that these discharges do not adversely affect the beneficial uses of the receiving waters or cause degradation of their water quality and establishes numeric effluent limitations for discharges from construction sites that utilize an active treatment system. An exceedance of the active treatment system numeric effluent limitation constitutes a General Permit violation. These systems lend themselves to technology-based numeric effluent limitations for turbidity and pH because of their known reliable treatment. Advanced systems have been in use in some form since the mid-1990s. An active treatment system is considered reliable, can consistently produce a discharge of less than 10 NTU, and has been used successfully at many sites in several states since 1995 to reduce turbidity to very low levels.

This General Permit contains “compliance storm (precipitation) event” exceptions from the technology-based numeric effluent limitations for active treatment system discharges. The rationale is that technology-based requirements are developed assuming a certain design storm (precipitation) event. The industry-standard active treatment system design storm is 10-year, 24-hour (as stated in Attachment F of this General Permit), so the compliance precipitation event has been established as the 10-year, 24-hour event as well to provide consistency.

I.T. Passive Treatment Requirements

The U.S. EPA’s 2022 NPDES General Permit for Stormwater Discharges from Construction Activities[113] requires the regulation of any chemically enhanced stormwater treatment. Chemically enhanced treatments are split into two categories: active treatment systems and passive treatment technologies (passive treatment including chemical and products). More information regarding active treatment systems can be found in the Section I.S above.

113 U.S. EPA, 2022 NPDES General Permit for Discharges from Construction Activities (January 11, 2017), <https://www.epa.gov/npdes/2022-construction-general-permit-cgp#2022cgp>

Passive treatment chemicals and products bind fine soil particles together through chemical ionic processes allowing heavy particles to settle out of solution without a fully mechanical or engineered system. Passive treatment technologies in the construction industry typically use coagulants and flocculants such as polyacrylamides (PAMs).

Construction site operators and dischargers regularly use passive treatment to reduce the turbidity levels in construction stormwater runoff. The construction industry uses passive treatment technologies because these products are a cost-effective method of reducing turbidity for compliance with turbidity numeric action levels in this General Permit, especially compared to active treatment systems. Examples of chemically enhanced BMPs used to meet General Permit turbidity numeric action levels are blocks, wattles, or water-applied products.

Many other industries use passive treatment chemicals in water purification, food production, and other industrial applications to reduce the turbidity and concentration of other pollutants in the discharge.

The types of flocculants and coagulants that can be included in passive treatment for this General Permit are non-ionic and anionic flocculants and coagulants. Cationic flocculants and coagulants can be used in an active treatment system and are regulated in Attachment F. Research on applicable chemical information indicates that many commonly used flocculants are toxic or contain toxic components, and when discharged to surface water have the potential to impact aquatic life and other beneficial uses.

Many types of passive treatment chemicals are toxic to fish and other aquatic organisms. Cationic PAM-based flocculants are acutely toxic to aquatic species in small quantities and are neurotoxins. Other flocculant products such as anionic PAM-based flocculants are chronically toxic to aquatic species in large quantities.

The California Stormwater Quality Association developed past guidance[114] on PAMs used in passive treatment technologies and included specific limitations to the use of soil binders containing PAMs:

1) Do not use PAMs on a slope that flows into a waterbody without passing through a sediment trap, sediment basin, or other sediment controls (e.g., wattles, silt fences, gravel bags);
2) The specific PAM copolymer formulation must be anionic. Cationic PAMs should not be used in any application because of known aquatic toxicity problems. Only the highest drinking water grade PAM certified for compliance with ANSI/NSF Standard 60 for drinking water treatment, should be used for soil applications;

114 CASQA Construction BMP Handbook, 2015.

3) PAMs designated for erosion and sediment control should be “water soluble” or “linear” or “non-cross linked”; and

4) PAMs should not be used as a stand-alone BMP to protect against water-based erosion. When combined with mulch, its effectiveness increases dramatically.

Additionally, a low-turbidity discharge from a passive treatment chemical application site does not always correspond to low levels of solids in the discharge and/or an improvement in water quality downstream because:

1) Turbidity monitoring solely measures small size solids suspended in the water; turbidity monitoring does not measure particle size, weight, or bed load of sediment from flocculated solids leaving a site; and

2) Passive treatment chemicals discharged either by aerial deposition or through stormwater runoff contributes similar toxicity threats to aquatic life.

This General Permit regulates the use of passive treatment in Attachment G, however, specific technology-based and/or water quality-based numeric effluent limitations have not been implemented in this General Permit for passive treatment chemicals because there is currently no consistent and proven data to determine the level of toxicity and water quality impacts that negatively outweighs the economic benefit associated with the use of passive treatment technologies.

I.U. Post-Construction Requirements

I.U.1. General

Past practices for new and redevelopment construction activities have resulted in modified natural watershed and stream processes. This is caused by altering the terrain, modifying the vegetation and soil characteristics, introducing impervious surfaces such as pavement and buildings, increasing drainage density through pipes and channels, and altering the condition of stream channels through straightening, deepening, and armoring. These changes result in a drainage system where sediment transport capacity is increased, and sediment supply is decreased. A receiving channel’s response is dependent on dominant channel materials and its stage of adjustment. Construction activity can lead to impairment of beneficial uses in two main ways:

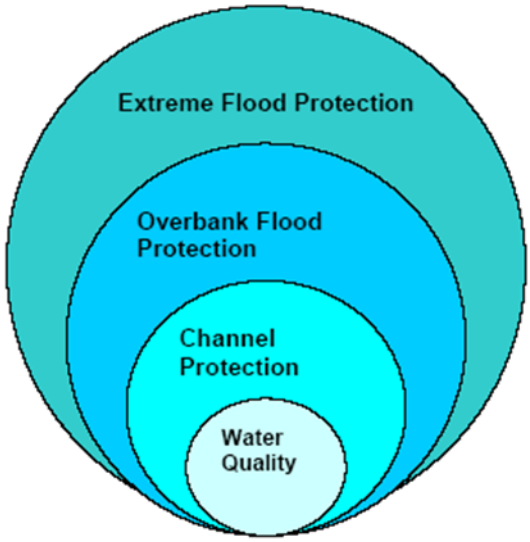
a. Stormwater discharges occurring during the actual construction process can negatively affect the chemical, biological, and physical properties of downstream receiving waters. The most likely pollutant is sediment due to the disturbance of the landscape, however pH and other non-visible pollutants are also of great concern; and

b. The finished project may result in significant modification of the site’s long-term response to precipitation after most construction activities are completed at a construction site. New development and redevelopment projects have almost

always resulted in permanent post-construction water quality impacts because more precipitation ends up as runoff and less precipitation is intercepted, evaporated, and infiltrated.

An effective stormwater management strategy must address the full suite of precipitation events (water quality, channel protection, overbank flood protection, extreme flood protection) (Figure 1).

Figure 1 – Suite of Precipitation Events



The post-construction stormwater performance standards in this General Permit specifically address water quality and channel protection events. Overbank flood protection and extreme flood protection events are traditionally dealt with in local drainage and flood protection ordinances. However, measures in this General Permit to address water quality and channel protection also reduce overbank and extreme flooding impacts. This General Permit aims to match post-construction runoff to pre-construction runoff for the 85th percentile, 24-hour storm event, which reduces the risk of impact to the receiving water's channel morphology and provides some water quality protection.

Projects are exempt from the post-construction requirements in this General Permit if located within an area subject to post-construction standards of an active Phase I or II MS4 permit with approved post-construction requirements or if they are linear underground and overhead projects.

I.U.2. Water Quality

This General Permit requires dischargers to replicate the pre-project runoff water balance (defined as the amount of rainfall that ends up as runoff) for the smallest storms up to the 85th percentile storm event, or the smallest storm event that generates runoff, whichever is larger. Contemporary stormwater management

generally routes these flows directly to the drainage system, increasing pollutant loads and potentially causing adverse effects on receiving waters. These smaller water quality events happen much more frequently than larger events and generate much higher pollutant loads on an annual basis. There are other adverse hydrological impacts that result from not designing according to the site's pre-construction water balance. In Maryland, Klein[115] noted that baseflow decreases as the extent of urbanization increases. Ferguson and Suckling[116] noted a similar relation in watersheds in Georgia. On Long Island, Spinello and Simmons[117] noted substantial decreases in base flow in intensely urbanized watersheds.

This General Permit emphasizes runoff reduction through on-site stormwater reuse, interception, evapotranspiration, and infiltration through non-structural controls and conservation design measures (e.g., downspout disconnection, soil quality preservation/enhancement, interceptor trees). Employing these measures close to the source of runoff generation is the easiest and most cost-effective way to comply with the pre-construction water balance standard. Using low-tech runoff reduction techniques close to the source is consistent with a number of recommendations in the literature.[118] In many cases, BMPs implemented close to the source of runoff generation cost less than end-of the pipe measures.[119] Dischargers are given the option of using the SMARTS Post-Construction Calculator to calculate the required runoff volume or a watershed process-based, continuous simulation model such as the EPA's Stormwater Management Model (SWMM) or Hydrologic Simulation Program Fortran. Such methods used by the

115 Klein 1979 as cited in Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE, p. 117.

116 Ferguson and Suckling 1990 as cited Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE, p. 117.

117 Center for Watershed Protection (CWP). 2000. The Practice of Watershed Protection: Techniques for protecting our nation's streams, lakes, rivers, and estuaries. Ellicott City, MD, p. 741.

118 Bay Area Stormwater Management Agencies Association (BASMAA). 1997. Start at the Source: Residential Site Planning and Design Guidance Manual for Stormwater Quality Protection. Palo Alto, CA;
McCuen, R.H. 2003 Smart Growth: hydrologic perspective. Journal of Professional Issues in Engineering Education and Practice. Vol (129), p. 151-154;
Moglen, G.E. and S. Kim.2007. Impervious imperviousness-are threshold-based policies a good idea? Journal of the American Planning Association, Vol 73 No.2. p. 161-171.

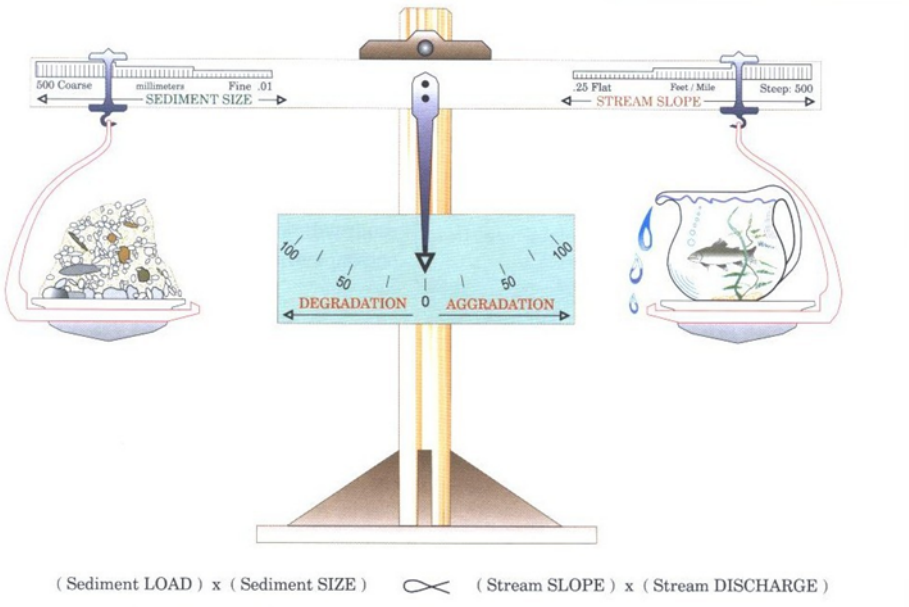
119 Delaware Department of Natural Resources (DDNR). 2004. Green technology: The Delaware Urban Runoff Management Approach. Dover, DE, p. 117.

discharger will be reviewed by the Regional Water Board upon Notice of Termination application.

I.U.3. Channel Protection

A basic understanding of fluvial geomorphic concepts is necessary to address channel protection. A dominant paradigm in fluvial geomorphology holds that streams adjust their channel dimensions (width and depth) in response to long-term changes in sediment supply and bank full discharge (1.5 to 2-year recurrence interval). The bank full stage corresponds to the discharge at which channel maintenance is the most effective (the discharge at which the moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work that results in the average morphologic characteristics of channels).[120] Lane (1955 as cited in Rosgen 1996[121]) showed the generalized relationship between sediment load, sediment size, stream discharge, and stream slope (Figure 2). A change in any one of these variables sets up a series of mutual adjustments in the companion variables with a resulting direct change in the physical characteristics of the stream channel.

Figure 2 – Schematic of the Lane Relationship[122]



Stream slope multiplied by stream discharge (the right side of the scale) is essentially an approximation of stream power, a unifying concept in fluvial

120 Dunne, T and L.B. Leopold. 1978. Water in Environmental Planning. San Francisco W.H. Freeman and Company.

121 Rosgen. D.L. 1996. Applied River Morphology. Pagosa Springs. Wildland Hydrology.

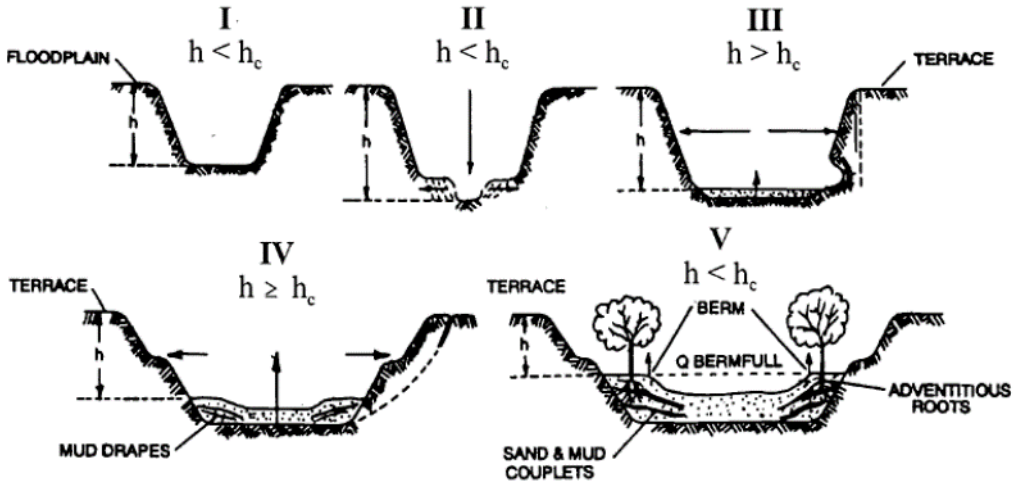
122 After Lane (1955) as cited in Rosgen (1996).

geomorphology (Bledsoe 1999). Urbanization generally increases stream power and affects the resisting forces in a channel (sediment load and sediment size represented on the left side of the scale).

Sediment loads can increase from 2 to 40,000 times over pre-construction levels during construction.[123] Most of this sediment is delivered to stream channels during large, episodic rain events.[124] This increased sediment load leads to an initial aggradation phase where stream depths may decrease as sediment fills the channel, leading to a decrease in channel capacity and increase in flooding and overbank deposition. A degradation phase initiates after construction is completed.

Schumm et. al (1984) developed a channel evolution model that describes the series of adjustments from initial downcutting, to widening, to establishing new floodplains at lower elevations (Figure 3).

Figure 3 – Channel Changes Associated with Urbanization[125]



Channel incision (Stage II) and widening (Stages III and to a lesser degree, Stage IV) are due to a number of fundamental changes on the landscape. Connected impervious areas and compaction of pervious surfaces increase the frequency and

123 Goldman S.J., K. Jackson, and T.A. Bursztynsky. 1986. Erosion and Sediment Control Handbook. McGraw Hill. San Francisco.

124 Wolman 1967 as cited in Paul, M.P. and J.L. Meyer. 2001. Streams in the Urban Landscape. Annu. Rev. Ecol. Syst. 32, p. 333-365.

125 After incised Channel Evolution Sequence in Schumm et. al 1984.

volume of bank full discharges.[126] Increased drainage density (miles of stream length per square mile of watershed) also negatively impacts receiving stream channels.[127] Increased drainage density and hydraulic efficiency leads to an increase in the frequency and volume of bank full discharges because the time of concentration is shortened. Flows from engineered pipes and channels are also often "sediment starved" and seek to replenish their sediment supply from the channel.

Encroachment of stream channels can also lead to an increase in stream slope, which leads to an increase in stream power. In addition, watershed sediment loads and sediment size (with size generally represented as the median bed and bank particle size, or d_{50}) decrease during urbanization.[128] This means that even if pre- and post-development stream power is the same, more erosion will occur in the post-development stage because the smaller particles are less resistant (provided they are non-cohesive).

As shown in Stages II and III, the channel deepens and widens to accommodate the increased stream power[129] and decrease in sediment load and sediment size. Channels may actually narrow as entrained sediment from incision is deposited laterally in the channel. After incised channels begin to migrate laterally (Stage III), bank erosion begins, which leads to general channel widening.[130] At this point, a majority of the sediment that leaves a drainage area comes from within the channel, as opposed to the background and construction related hillslope

126 Booth, D.B. and C.R. Jackson. 1997. Urbanization of Aquatic Systems: Degradation Thresholds, Stormwater Detection, and the Limits of Mitigation. Journal of the American Water Resources Association Vol. 33, No. 5, p. 1077-1089.

127 May, C.W. 1998. Cumulative effects of urbanization on small streams in the Puget Sound Lowland ecoregion. Conference proceedings from Puget Sound Research '98 held March 12, 13 1998 in Seattle, WA;
Santa Clara Valley Urban Runoff Pollution Prevention Program. 2002. Hydromodification Management Plan Literature Review, p. 80.

128 Finkenbine, J.K., D.S. Atwater, and D.S. Mavinic. 2000. Stream health after urbanization. J. Am. Water Resour. Assoc. 36, p. 1149-60;
Pizzuto. J.E. W.S. Hession, and M. McBride. 2000. Comparing gravel-bed rivers in paired urban rural catchments of southeastern Pennsylvania. Geology 28, p. 79-82.

129 Hammer 1973 as cited in Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE, p.117;
Booth, D.B. 1990. Stream Channel Incision Following Drainage Basin Urbanization. Water Resour. Bull. 26, p. 407-417.

130 Trimble, S.W. 1997. Contribution of Stream Channel Erosion to Sediment Yield from an Urbanizing Watershed. Science: Vol. 278 (21), p. 1442-1444.

contribution. Stage IV is characterized by more aggradation and localized bank instability. Stage V represents a new quasi-equilibrium channel morphology in balance with the new flow and sediment supply regime. In other words, stream power is in balance with sediment load and sediment size.

The magnitude of the channel morphology changes discussed above varies along a stream network as well as with the age of development, slope, geology (sand-bedded channels may cycle through the evolution sequence in a matter of decades whereas clay-dominated channels may take much longer), watershed sediment load and size, type of urbanization, and land use history. It is also dependent on a channel's stage in the channel evolution sequence when urbanization occurs. Management strategies must take into account a channel's stage of adjustment and account for future changes in the evolution of channel form (Stein and Zaleski 2005).[131]

Traditional structural water quality BMPs (e.g., detention basins and other devices used to store volumes of runoff) unless they are highly engineered to provide adequate flow duration control, do not adequately protect receiving waters from accelerated channel bed and bank erosion, do not address post-development increases in runoff volume, and do not mitigate the decline in benthic macroinvertebrate communities in the receiving waters,[132] and suggest that structural BMPs are not as effective in protecting aquatic communities as a continuous riparian buffer of native vegetation. This is supported by the findings of Zucker and White,[133] where instream biological metrics were correlated with the extent of forested buffers.

This General Permit requires dischargers to maintain pre-development drainage densities and times of concentration in order to protect channels and encourages dischargers to implement setbacks to reduce channel slope and velocity changes that can lead to aquatic habitat degradation.

There are a number of other approaches for modeling fluvial systems, including statistical and physical models and simpler stream power models.[134] The use of

131 Stein, E.S. and S. Zaleski. 2005. Managing runoff to protect natural stream: the latest developments on investigation and management of hydromodification in California. Southern California Coastal Water Research Project Technical Report 475, p. 26.

132 Horner, R.R. 2006. Investigation of the Feasibility and Benefits of Low-Impact Site Design Practices (LID) for the San Diego Region.

133 Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE, p. 117.

134 Finlayson, D.P. and D.R. Montgomery. 2003. Modeling large-scale fluvial erosion in geographic information systems. Geomorphology (53), p.147-164.

these models in California is described in Stein and Zaleski (2005).[135] Rather than require a specific one-size-fits-all modeling method in this permit, the State Water Board intends to develop a stream power and channel evolution model-based framework to assess channels and develop a hierarchy of suitable analysis methods and management strategies. In time, this framework may become a State Water Board water quality control policy.

I.U.4. General Permit Linkage to Overbank and Extreme Flood Protection

Site design BMPs (e.g., rooftop and impervious disconnection, vegetated swales, setbacks and buffers) filter and settle out pollutants and provide for more infiltration than is possible for traditional centralized structural BMPs placed at the site's lowest point. They provide source control for runoff and lead to a reduction in pollutant loads. When implemented, they also help reduce the magnitude and volume of larger, less frequent storm events (e.g., 10-yr, 24-hour storm and larger), thereby reducing the need for expensive flood control infrastructure. Non-structural BMPs can also be a landscape amenity, instead of a large, isolated structure requiring substantial area for ancillary access, buffering, screening, and maintenance facilities. The multiple benefits of using non-structural benefits will be critically important as the state's population increases and imposes strains upon our existing water resources.

Maintaining predevelopment drainage densities and times of concentration will help reduce post-development peak flows and volumes in areas not covered under a municipal permit. The most effective way to preserve drainage areas and maximize time of concentration is to implement landform grading, incorporate site design BMPs and implement distributed structural BMPs (e.g., bioretention cells, rain gardens, rain cisterns).

This General Permit requires dischargers to maximize sheet flow and use an "open" drainage system (e.g., swales, ditches, vegetated channels) for concentrated flows to meet the drainage density requirement. Sheet flow areas, swales, ditches, and vegetated channels are not considered streams for the purpose of calculating drainage density.

This General Permit requires dischargers to use recommended methods in the applicable local hydraulic design or flood control manual to meet the time of concentration requirements. The discharger is required to use the time of concentration calculation method contained in the Natural Resources Conservation Service's Technical Release 55: Urban Hydrology for Small Watersheds if a recommended method does not exist.

135 Stein, E.S. and S. Zaleski. 2005. Managing runoff to protect natural stream: the latest developments on investigation and management of hydromodification in California. Southern California Coastal Water Research Project Technical Report 475, p. 26.

Dischargers with active General Permit coverage are required to use the post-construction calculator in SMARTS or the approved post-construction standards of an applicable Phase I or Phase II Municipal Separate Storm Sewer System (MS4) NPDES permit to report compliance with this General Permit post-construction requirements.

This General Permit requires the discharger to utilize the post-construction calculator in SMARTS if: (1) a construction project (other than a linear and underground and overhead project that is not subject to this General Permit's post-construction requirements) was or is approved by the local municipality prior to the municipality having post-construction standards adopted pursuant to a Phase I or Phase II MS4 permit or (2) the project was not subject to the post-construction standards of a Phase I or Phase II entity.

I.V. Stormwater Pollution Prevention Plans (SWPPPs)

U.S. EPA's Construction General Permit requires that qualified personnel conduct inspections and defines qualified personnel as "a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact stormwater quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of stormwater discharges from the construction activity."[136] U.S. EPA also suggests that qualified personnel prepare SWPPPs and points to numerous states that require certified professionals to be on construction sites at all times.

This General Permit requires that all SWPPPs be site-specific and are written, amended, and certified by a Qualified SWPPP Developer and includes the information needed to demonstrate compliance with all requirements of this General Permit to ensure that water quality is being protected. SWPPP development and updates are required to be based on actual site conditions and maintain continued compliance with requirements of this General Permit. This General Permit also requires the current SWPPP be kept on-site, made available for review, and uploaded through SMARTS.

Although the QSD can change over the life of a project, a QSD, representing the discharger, is expected to make necessary corrections and amendments to the original SWPPP throughout the life of the project to ensure the site's compliance plan with this General Permit is documented and current. Similarly, a QSP, representing the discharger, must also oversee the implementation of the site-specific BMPs described in the corresponding site-specific SWPPP.

136 U.S. EPA, Developing Your Stormwater Pollution Prevention Plan (May 2017), <https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf> [as of May 20, 2021]

The local municipality cannot enforce General Permit requirements; this is done by the Regional Water Board inspectors. The local municipality is typically responsible for ensuring compliance with local stormwater ordinance which prohibits sediment and other pollutants from entering the MS4, and with a local grading ordinance that typically requires an erosion and sediment control plan (typically a sheet in the construction plan set) for projects with a grading permit. The local municipality may have a condition in their MS4 stormwater permit requiring the agency to check that certain items are included in the SWPPP. This does not constitute approval of the SWPPP, and the review is typically conducted prior to issuing a grading permit.

The previous versions of the General Permit required development and implementation of a SWPPP as the primary compliance mechanism. The SWPPP has three major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges, (2) to describe and ensure the implementation of site-specific BMPs to reduce or eliminate sediment and other pollutants in stormwater and non-stormwater discharges, and (3) to convey a plan to restore erosion protection and site hydrology post-construction. The SWPPP must include site-specific BMPs that address source control, pollutant control, and treatment control.

This General Permit shifts some of the previous measures into specific General Permit requirements, each individually enforceable as a General Permit term. This General Permit emphasizes the use of appropriately selected, correctly installed, and maintained site-specific BMPs. This approach provides the flexibility necessary to establish BMPs that can effectively control sources of pollutants during changing construction activities. These specific requirements also improve both the clarity and the enforceability of the General Permit so that the dischargers understand, and the Water Boards and public can determine whether the discharges comply with this General Permit’s requirements.

The SWPPP must be implemented at the appropriate level to protect water quality at all times throughout all of the construction project phases. The SWPPP must remain on the site during construction activities, commencing with the initial mobilization and ending with the termination of coverage under the General Permit. Linear underground and overhead project dischargers are required to make the SWPPP available at the construction site during site operating hours while construction is occurring and shall be made available upon request by a State, Federal, or Municipal inspector. A site-specific SWPPP may be kept in electronic format. All maps and figures must be printed, hard copy, full size, and available on the construction site. Current copies of the BMPs and maps and drawings will be left with the field crew and the original SWPPP shall be made available via a request by radio or telephone when the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site. The SWPPP shall be available from the SWPPP contact listed in the Permit Registration Documents until stabilization is achieved even when construction activities are complete.

A SWPPP must be appropriate for the type and complexity of a project and will be developed and implemented to address site-specific conditions. Some projects may have similarities or complexities, yet each project is unique in its progressive state that requires specific description and selection of BMPs needed to address all possible generated pollutants.

I.W. Total Maximum Daily Loads (TMDLs)

I.W.1. Introduction

Total Maximum Daily Loads (TMDLs) are regulatory tools that provide the maximum amount of a pollutant from potential sources in the watershed that a water body can receive while attaining water quality standards. A TMDL is defined as the sum of the allowable loads of a single pollutant from all contributing point sources (waste load allocations) and non-point sources (load allocations), plus the contribution from background sources. (40 Code of Federal Regulations § 130.2, subd. (i).) Discharges covered by this General Permit are considered to be point source discharges, and therefore must comply with effluent limitations that are "consistent with the assumptions and requirements of any available waste load allocation for the discharge prepared by the State and approved by EPA pursuant to 40 Code of Federal Regulations section 130.7." (40 Code of Federal Regulations § 122.44, subd. (d)(1)(vii).) In addition, Water Code § 13263, subdivision (a), requires that waste discharge requirements implement relevant water quality control plans. Many TMDLs in existing water quality control plans include both waste load allocation and implementation requirements. Attachment H of this General Permit lists the watersheds with U.S. EPA-approved and U.S. EPA-established TMDLs that include TMDL requirements for dischargers covered by this General Permit.

TMDLs are adopted through a separate U.S. EPA and Regional Water Board public process. The previous permit included a list of potentially applicable TMDLs, and this list has been refined in this General Permit through consultation with the Regional Water Boards.

I.W.2. General Permit Implementation Requirements

Water Board staff evaluated and developed the following information in the development of the Attachment H implementation requirements:

- TMDL-specific requirements including implementation timelines, additional monitoring and reporting requirements, compliance determination language regarding compliance with numeric action levels, applicable TMDL-specific effluent limitations, and reporting requirements consistent with the applicable TMDL(s);

- Information regarding this General Permit's TMDL-specific requirements, timelines, and deliverables consistent with the assumptions and requirements of applicable waste load allocation(s) to implement the TMDL(s);
- Information regarding the implementation of BMPs (as applicable) to comply with applicable waste load allocations;
- Concentration-based monitoring requirements and information regarding the required determination of compliance for numeric effluent limitations through concentration-based compliance monitoring, corresponding calculation methodology, and reporting; and
- Compliance deadlines, based on TMDL implementation schedules, were set for Responsible Dischargers to comply with the TMDL-specific requirements on, and after, the provided date. TMDLs that lacked or surpassed the implementation schedules prior to this issuance of this General Permit were assigned compliance deadlines set for the effective date of this General Permit.

I.W.3. TMDL Evaluation Steps

The State Water Board used the following process to evaluate and translate each TMDL in Attachment H:

- Step 1: Determined whether the TMDL applies to construction stormwater discharges and authorized non-stormwater discharges regulated by this General Permit (discharges regulated by this General Permit);
- Step 2: Identified the specific TMDL requirements that are applicable to discharges regulated by this General Permit;
- Step 3: Translated the TMDL requirements into TMDL-specific General Permit requirements, numeric action levels, or numeric effluent limitations;
- Step 4: Determined a compliance schedule that corresponds with the compliance date of the TMDL;
- Step 5: Developed monitoring and reporting requirements to determine compliance with waste load allocations;
- Step 6: Identified the existing General Permit requirements applicable to each constituent identified in the TMDLs, and evaluated if additional TMDL-specific requirements were required to implement the TMDL for discharges regulated by this General Permit; and
- Step 7: Provided explanation regarding how the State Water Board translated each TMDL into specific requirements.

I.W.4. Applicability

Responsible Dischargers are: (1) dischargers with Notice of Intent coverage under this General Permit who discharge stormwater associated with construction

activities and authorized-non-stormwater discharges, (2) either directly or through a municipal separate storm sewer system (MS4) to impaired water bodies identified in a U.S. EPA approved TMDL with an assigned waste load allocation to construction stormwater sources listed in Attachment H, and (3) have identified one or more TMDL-pollutants in the site's construction stormwater discharges.

Responsible Dischargers must comply with applicable TMDL-specific General Permit requirements in Attachment H and all other applicable provisions of this General Permit.

Each TMDL-specific permit requirement listed in Attachment H (Table H-2 for TMDL-specific General Permit Requirements) provides the specific translation and required actions for Responsible Dischargers as discussed below. Table H-2 includes the specific watershed, water body, or water bodies and additional tributaries to ensure Responsible Dischargers know which Table H-2 TMDL requirement applies depending on the receiving water body(ies) of the site.

This General Permit's pH and turbidity numeric action levels continue to apply in addition to the TMDL-specific requirements in Table H-2. The measurement of compliance with the TMDL-specific requirements, whether TMDL-related numeric action levels or numeric effluent limits, is defined in the Glossary (Attachment B). Stormwater discharges are intermittent in nature and many of the Attachment H TMDL waste load allocations are translated to numeric action levels or numeric effluent limitations for protection against acute impacts to beneficial uses in the receiving waters.

The following are examples to assist Responsible Dischargers in determining which water bodies are subject to the TMDLs in Table H-2:

- Watershed example: If the "Impaired Water Body/Watershed" column states "Napa River Watershed," the TMDL and its requirements are applicable to dischargers discharging directly or through an MS4 into water bodies within the Napa River Watershed.
- River and tributaries (Watershed) example: If the "Impaired Water Body/ Watershed" column states "Los Angeles River and Tributaries," this TMDL and its requirements are applicable to the dischargers discharging directly or through an MS4 into the Los Angeles River watershed.
- Lagoon example: If the "Impaired Water Body/ Watershed" column states "Colorado Lagoon," this TMDL and its requirements are applicable to dischargers discharging directly or through an MS4 into the Colorado Lagoon.

TMDL-specific General Permit requirements do not apply to dischargers with a waiver or dischargers that meet the Notice of Non-Applicability (NONA) criteria.

There are currently few environmental laboratory accredited program (ELAP)-accredited laboratories capable of analyzing the following compounds (e.g.,

chlordane, dieldrin, total PCBs, total DDTs, 4,4-DDT, PAHs) to the low concentrations for some of the numeric action levels or numeric effluent limitations in Attachment H. Attachment H, Section I.G.5 provides a modified compliance protocol for Responsible Dischargers for the Los Angeles Area Lakes TMDL that are required to comply with TMDL-related numeric effluent limitations for Chlordane, Dieldrin, DDT, and PCBs. It is the expectation that the Water Boards will provide guidance and alternative methods for a Responsible Discharger to demonstrate compliance, if the Responsible Discharger has provided the Water Boards adequate information demonstrating that:

- It is infeasible to analyze a translated waste load allocation using an ELAP-accredited laboratory;
- The sample results would invalidate federally-required sufficiently sensitive methods; or
- No method in 40 Code of Federal Regulations Part 136 can detect and quantify the amount specified for the construction stormwater.

I.W.5. General Permit Summary

The following requirements, applicable to dischargers enrolled under this General Permit, were considered in determining the necessity of additional TMDL-specific permit implementation for applicable to Responsible Dischargers:

- Storm Water Pollution Prevention Plan (SWPPP): This General Permit requires dischargers to identify construction materials handled at the site and describe all potential sources of pollutants that could be discharged from their site and describe the BMPs that will be implemented to control their discharges. This General Permit requires Responsible Dischargers to revise their SWPPP whenever a significant change in monitoring or sampling occurs.
- Non-Stormwater Discharges (NSWDs): The only NSWDs authorized by this General Permit are described in the Order, and the discharge is prohibited unless regulated by a separate NPDES permit.
- Visual Observations: Dischargers are required to conduct pre, during, and post precipitation event site visual inspections which include: 1) monitoring of authorized NSWDs, 2) identification and elimination of unauthorized NSWDs, 3) identification of potential construction pollutant sources, and 4) necessary BMP maintenance and implementation.
- Sampling and Analysis: Dischargers must sample for all construction pollutants (with the potential to discharge to a waters of the United States) identified in their SWPPP in accordance with this General Permit. Dischargers are required to collect and analyze stormwater samples from construction site discharge locations over the reporting period in accordance with the requirements of this General Permit. When this previous permit's requirements were not sufficient to

implement the TMDL, additional monitoring and sampling requirements are set forth in Attachment H's TMDL Compliance Table (Table H-2).

I.W.6. TMDL-Specific Requirements

Attachment H, Table H-2 contains TMDL-specific requirements for each TMDL with sources from discharges regulated by this General Permit. This Fact Sheet discusses TMDLs by pollutant since many of the TMDLs with the same pollutants are translated in the same manner. Table H-2 is organized by Regional Water Board jurisdiction and watershed, allowing the Responsible Dischargers to easily identify their applicable requirements.

a. Bacteria TMDLs

Nine Indicator Bacteria TMDLs (eight established by the Los Angeles Regional Water Quality Control Board and one by the U.S. EPA) apply to construction stormwater dischargers. Each TMDL addresses bacterial pollutants by establishing bacteria water quality objectives for one or more of the following Indicator Bacteria: Enterococcus, Escherichia coli (E. Coli), Fecal Coliform, and Total Coliform. These pollutants are referred to as Indicator Bacteria for the purpose of Attachment H and this Fact Sheet.

The water quality objectives for Indicator Bacteria are specific to fresh and marine waters and designated beneficial uses such as water contact recreation (REC-1), limited water contact recreation (LREC-1), and water non-contact recreation (REC-2).

Recreating in waters exceeding indicator bacteria water quality objectives has long been associated with adverse human health effects. Specifically, local and national epidemiological studies demonstrate that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.[137]

The Indicator Bacteria TMDLs and their beneficial uses are summarized below:

- Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL[138]: Fresh Waters (LREC-1, REC-1, REC-2) and Marine Waters (REC-1)

137 Ballona Creek, Estuary, and Tributary Bacteria TMDL, p. 2.

138 Los Angeles Regional Water Board, Ballona Creek, Estuary, and Tributary Bacteria TMDL (June 7, 2012), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R12-008_RB_BPA.pdf> [as of May 20, 2021]

- Harbor Beaches of Ventura County Bacteria TMDL[139]: Marine Waters (REC-1)
- Long Beach City Beaches and Los Angeles River Estuary Bacteria TMDL[140]: Marine Waters (REC-1)
- Los Angeles Harbor Bacteria TMDL[141]: Marine Waters (REC-1)
- Los Angeles River Bacteria TMDL[142]: Fresh Waters (LREC-1)
- Malibu Creek Bacteria TMDL[143]: Fresh Waters (REC-1) and Marine Waters (REC-1)
- Marina del Rey Bacteria TMDL[144]: Marine Waters (REC-1)

139 Los Angeles Regional Water Quality Control Board, Harbor Beaches of Ventura County (Kiddie Beach and Hobie Beach) Bacteria TMDL (November 1, 2007), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2007-017_RB_BPA.pdf> [as of May 20, 2021]

140 United States Environmental Protection Agency IX, Long Beach City Beaches and Los Angeles River Estuary Total Maximum Daily Loads for Indicator Bacteria (March 26, 2012), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Longbeach/finalTMDLs-LongBeachCityBeaches-LARiverEstuaryBacteria.pdf> [as of April 28, 2022]

141 Los Angeles Regional Water Quality Control Board, Los Angeles Harbor Bacteria TMDL (Inner Cabrillo Beach Main Ship Channel) (July 1, 2004), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2004-011_RB_BPA.pdf> [as of May 20, 2021] (Los Angeles Harbor Bacteria TMDL)

142 Los Angeles Regional Water Quality Control Board, Los Angeles River Watershed Bacteria TMDL (July 9, 2010), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R10-007_RB_BPA1.pdf> [as of May 20, 2021] (Los Angeles Bacteria TMDL)

143 Los Angeles Regional Water Quality Control Board, Malibu Creek and Lagoon Bacteria TMDL (June 7, 2012), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R12-009_RB_BPA.pdf> [as of May 20, 2021] (Malibu Creek Bacteria TMDL)

144 Los Angeles Regional Water Quality Control Board, Marina del Rey Harbor Mother's Beach and Back Basins Bacteria TMDL (August 7, 2003), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2003-012_RB_BPA.pdf> [as of May 20, 2021] (Marina del Rey Bacterial TMDL)

- Santa Clara River Bacteria TMDL[145]: Fresh Waters (REC-1) and Marine Waters (REC-1)
- Santa Monica Bay Beaches Bacterial TMDL[146]: Marine Waters (REC-1)

The bacteria water quality objectives applicable to the beneficial uses associated with these water bodies are listed in Table 11 below.

Table 11 – Los Angeles Regional Water Quality Control Board Bacteria Water Quality Objectives

Beneficial Uses	E. Coli	Total Coliform	Fecal Coliform	Enterococcus	Total Coliform*
Fresh Waters REC-1	235/100 ml				
Fresh Waters LREC-1	576/100 ml				
Fresh Waters REC-2	4,000/100 ml				
Marine Waters REC-1		10,000/100 ml	400/100 ml	104/100 ml	1,000/100 ml

* If the fecal-to-total coliform ratio is greater than 0.1

- Source Analysis

  The primary sources of elevated indicator bacteria densities include dry-weather urban runoff and stormwater conveyed to the impaired waters. Although construction stormwater dischargers are not expected to be significant sources of indicator bacteria, they are considered Responsible Dischargers for these TMDLs.

- Waste Load Allocation Translation

  The Indicator Bacteria TMDLs assign the waste load allocations in two different ways:

  i. The TMDLs for the: (1) Harbor Beaches of Ventura County, (2) Santa Clara River, (3) Long Beach City Beaches, and (4) Los Angeles River

145 Los Angeles Regional Water Quality Control Board, Santa Clara River Estuary and Reaches 3, 5, 6, and 7 Indicator Bacteria TMDL (July 8, 2010), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R10-006_RB_BPA.pdf> [as of May 20, 2021] (Santa Clara River Bacteria TMDL)

146 Los Angeles Regional Water Quality Control Board, Santa Monica Bay Beaches Bacteria TMDL (July 2, 2014), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R12-007_RB_BPA1.pdf>

assigns a waste load allocation of zero (0) allowable exceedance days of the Bacteria WQOs, listed in Table 11 above.

ii. The TMDLs for the: (1) Ballona Creek, Ballona Estuary, and Sepulveda Channel, (2) Malibu Creek, Lagoon, and adjacent beach, (3) Marina del Rey Harbor, Mother's Beach, and Back Basins, (4) Los Angeles Harbor (including Inner Cabrillo Beach and Main Ship Channel), and (5) Santa Monica Bay Beaches assign waste load allocations to construction stormwater dischargers equal to the Bacteria WQOs.

The two waste load allocation definitions were translated similarly and require Responsible Dischargers to "meet and not exceed" the bacteria water quality objectives listed in Table 11. Responsible Dischargers will be required to implement minimum BMPs in order to comply with the translated waste load allocations because construction stormwater dischargers are not expected to be significant sources of indicator bacteria. This General Permit requires all dischargers to perform a pollutant source assessment and implement specific BMPs to prevent or eliminate any exceedance of water quality objectives contained within applicable TMDLs, including those for indicator bacteria. Therefore, compliance with this General Permit is consistent with the requirements and assumptions of the TMDL and sufficient to achieve compliance with the waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers with an applicable TMDL for Indicator Bacteria listed in Attachment H shall comply with the requirements of this General Permit.

  Responsible Dischargers that identify on-site sources of indicator bacteria in the required pollutant source assessment are to implement BMPs specific to preventing or controlling stormwater exposure to indicator bacteria. The minimum bacteria source control BMPs include QSP-conducted training of site staff, sanitary septic waste management, and routine housekeeping of identified bacteria sources. Structural BMPs such as retention, infiltration, or diversion of stormwater reduce bacteria loading to receiving waters. Responsible Dischargers that implement a suite of minimum BMPs to control stormwater exposure to source of indicator bacteria are expected to meet the assigned waste load allocation. If a BMP is observed failing, the Responsible Discharger is to evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the waste load allocations in the future. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information about exceedances of the waste load allocation.

Compliance with Indicator Bacteria TMDLs shall be achieved by the effective date of this General Permit, as shown in Table H-2 in Attachment H.

b. Chloride and Salts TMDLs

Three TMDLs for chloride and other salts (Calleguas Creek, Santa Clara River Reach 3, and Upper Santa Clara River) apply to construction stormwater dischargers. Elevated levels of chloride and salts can impair a water body's beneficial uses associated with agricultural uses for irrigation of salt-sensitive crops and groundwater recharge to provide drinking water.

i. Calleguas Creek Watershed Salts TMDL[147]

The Los Angeles Regional Water Quality Control Board adopted the TMDL for Boron, Chloride, Sulfate, and TDS (salts) on October 4, 2007, to protect and restore water quality in the Calleguas Creek watershed by controlling the loading and accumulation of salts.

- Source Analysis

  Sources of salts in the watershed include water supply, water softeners that discharge to publicly treatment works (POTWS), POTW treatment chemicals, atmospheric deposition, pesticides and fertilizers, and indoor water use (e.g., chemicals, cleansers, food, etc.).[148] The salts are then transported through POTW discharges and runoff to surface water, shallow groundwater, or accumulate on the watershed within soils. Construction stormwater permittees are considered Responsible Dischargers for this TMDL.

- Waste Load Allocation Translation

  The Calleguas Creek Watershed Salts TMDL assigns interim and final waste load allocations during dry-weather conditions, when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours.[149] Both the interim and final dry-weather waste load allocations, shown in Table 12 and Table 13 below, apply in the receiving water at the base of each subwatershed.

147 Los Angeles Regional Water Board, Calleguas Creek Watershed Salts TMDL (October 4, 2007), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2007-016_RB_BPA.pdf> [as of May 20, 2021]

148 Calleguas Creek Watershed Salts TMDL, p.3.

149 Calleguas Creek Watershed Salts TMDL, p. 7-8.

Table 12 – Calleguas Creek Interim Dry-Weather Waste Load Allocations

Pollutant	Interim Limit (mg/L)
Boron Total	1.3
Chloride Total	230
Sulfate Total	1289
TDS Total	1720

Table 13 – Calleguas Creek Final Dry-Weather Waste Load Allocations

Receiving Water	Critical Condition Flow Rate (mgd)	Chloride Allocation (lb/day)	TDS Allocation (lb/day)	Sulfate Allocation (lb/day)	Boron Allocation (lb/day)
Simi	1.39	1,738	9,849	2,897	12
Las Posas	0.13	157	887	261	N/A
Conejo	1.26	1,576	8,931	2,627	N/A
Camarillo	0.06	72	406	119	N/A
Pleasant Valley (Calleguas)	0.12	150	850	250	N/A
Pleasant Valley (Revolon)	0.25	314	1,778	523	2

Discharges that occur during dry-weather conditions are referred to as non-stormwater discharges (NSWDs) and are only authorized by this General Permit if dischargers meet the conditions of Order, Section IV.A to control the discharge of pollutants off-site. Section IV.B of this General Permit's Order prohibits all NSWDs not authorized under Section IV.A; therefore, all unauthorized NSWDs must be eliminated or have regulatory coverage under a separate NPDES permit. Authorized NSWDs, as defined in this General Permit, are authorized because these discharges are assumed to not commingle with stormwater associated with construction activity. The Los Angeles Regional Water Quality Control Board may impose additional requirements on NSWDs if deemed necessary per a site-specific analysis.

Wet-weather discharges are not assigned waste load allocations as flows transport a larger amount of salts at low concentrations for most construction stormwater dischargers, therefore meeting water quality objectives during wet weather.

- Compliance Actions and Schedule

  Compliance with this General Permit's requirements is consistent with the assumptions and requirements of the Calleguas Creek Salts TMDL

and is sufficient to achieve the assigned salts waste load allocations. If a BMP is observed failing, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the waste load allocations in the future. Responsible Dischargers that perform pollutant assessments and implement BMPs specific to preventing or controlling stormwater exposure with salts are expected to meet the assigned waste load allocations. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information about exceedances of the waste load allocations.

The Calleguas Creek Watershed Salts TMDL's final compliance deadline is December 2, 2023. Therefore, the interim waste load allocations are applied to Responsible Dischargers upon the effective date of this General Permit.

ii. Santa Clara River Chloride Reach 3 TMDL[150]

The U.S. EPA adopted the Santa Clara River Chloride Reach 3 TMDL on June 18, 2003, to address the chloride impairment of Santa Clara River, Reach 3. Exceedances of chloride water quality standards in the Santa Clara River can impair the water's use as agricultural irrigation supply.

The U.S. EPA's analysis of available flow and loading data concluded that exceedances of the chloride water quality objectives are most likely to occur during low-flow conditions. Therefore, setting the TMDL and associated allocations at levels sufficient to implement the objectives during low-flow conditions will also result in attainment of the objectives during higher flow conditions.[151]

- Source Analysis

  The Santa Clara River Chloride Reach 3 TMDL identifies two major point sources (the Fillmore and Santa Paula Water Reclamation Plants) as well as a number of minor point sources, including runoff from construction sites. Construction stormwater permittees are therefore considered Responsible Dischargers for this TMDL. Sources of salts in the watershed include water supply, water softeners that discharge to

150 United States Environmental Protection Agency IX, Total Maximum Daily Load for Chloride in the Santa Clara River, Reach 3 (June 18, 2003) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Santa%20Clara%20River%20Reach%203%20Chloride%20TMDL/final%20SCR%20R3%20Cl%20TMDL.pdf> [as of May 20, 2021] (Santa Clara River Chloride Reach 3 TMDL)

151 Santa Clara River Chloride Reach 3 TMDL, p. 14.

publicly treatment works (POTWS), POTW treatment chemicals, atmospheric deposition, pesticides and fertilizers, and indoor water use (e.g., chemicals, cleansers, food, etc.).[152] The salts are then transported through POTW discharges and runoff to surface water, shallow groundwater, or accumulate on the watershed within soils.

- Waste Load Allocation Translation

  The Santa Clara River Chloride Reach 3 TMDL assigns a concentration-based chloride waste load allocation of 80 mg/L to Responsible Dischargers at the construction site's discharge locations(s) for dry-weather discharges into Santa Clara River Reach 3.

  Discharges that occur during dry-weather conditions are referred to as non-stormwater discharges (NSWDs) and are only authorized by this General Permit if dischargers meet the conditions of Order, Section IV.A to control the discharge of pollutants off the site. Order, Section IV.B prohibits all NSWDs not authorized under Section IV.A; therefore, all unauthorized NSWDs must be eliminated or have regulatory coverage under a separate NPDES permit. Authorized NSWDs, as defined in this General Permit, are authorized because these discharges are assumed to not commingle with stormwater associated with construction activities. The Los Angeles Regional Water Quality Control Board may impose additional requirements on NSWDs if deemed necessary per a site-specific analysis.

- Compliance Actions and Schedule

  Compliance with this General Permit's requirements is consistent with the assumptions and requirements of the Santa Clara River Chloride Reach 3 TMDL and is consistent with the assigned chloride waste load allocation. If a BMP is observed failing, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the waste load allocation in the future. Responsible Dischargers that perform pollutant assessments and implement BMPs specific to preventing or controlling stormwater exposure with salts are expected to meet the assigned waste load allocation. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information about exceedances of the waste load allocation.

  The Santa Clara River Chloride Reach 3 TMDL does not have an implementation plan, nor compliance deadline, as it was established by the U.S. EPA rather than the Los Angeles Regional Water Quality

152 Santa Clara River Chloride Reach 3 TMDL, p. 11-12.

Control Board. Therefore, the discharger shall meet the assigned waste load allocation by the effective date of this General Permit.

iii. Upper Santa Clara River Chloride TMDL[153]

The Los Angeles Regional Water Quality Control Board adopted the Revision of the Upper Santa Clara River Chloride TMDL on October 9, 2014, to address elevated chloride concentrations causing exceedances of water quality objectives for Reaches 5 and 6 of the Santa Clara River. Chloride-impaired water bodies that are used for agricultural irrigation supply can negatively impact the growth of salt-sensitive crops.

- Source Analysis

  The primary sources of chloride into Reaches 5 and 6 of the river are discharges from the Saugus and Valencia Water Reclamation Plants, contributing roughly 70 percent of the load.[154] Other NPDES dischargers, including those covered under this General Permit, are considered minor contributors of chloride to the Upper Santa Clara River. Therefore, construction stormwater dischargers are considered Responsible Dischargers for this TMDL.

- Waste Load Allocation Translation

  The Responsible Dischargers have been assigned a waste load allocation of 100 mg/L as 3-month rolling average. Compliance with the 3-month rolling average is currently beyond the scope of the monitoring and sampling requirements of this General Permit. A requirement to calculate a 3-month rolling average would put an undue burden on the Responsible Dischargers. Therefore, the rolling average limit will be translated into a numeric action level of 100 mg/L, to be met at the construction discharge location(s), as shown in Table 14 below. Translating the 3-month rolling average limit into a numeric action level with the same concentration ensures that the limit is stringent enough to achieve the surface water quality objectives.

Table 14 – Upper Santa Clara River Chloride Waste Load Allocation Translation

Pollutant	3-Month Rolling Average (mg/L)	Numeric Action Level (mg/L)
Chloride	100	100

153 Los Angeles Regional Water Quality Control Board, Upper Santa Clara River Chloride TMDL (October 9, 2014), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R14-010_RB_BPA.pdf> [as of March 7, 2019]

154 Upper Santa Clara River Chloride TMDL, p. 4.

Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to chloride, as is required in this General Permit, are expected to meet the translated numeric action level. Therefore, compliance with this General Permit's requirements is consistent with the assumptions and requirements of the Upper Santa Clara River Chloride TMDL and is sufficient to achieve the assigned waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of chloride through the required pollutant source assessment shall compare all non-visible sampling and analytical results to the chloride numeric action level. If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs implemented and identify a strategy in the site's SWPPP to prevent potential exceedances of the numeric action level in the future. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information about exceedances of the numeric action level.

  The Upper Santa Clara River Chloride TMDL assigns the waste load allocation to Responsible Dischargers upon the effective date of the TMDL. Because the TMDL did not specify a final compliance deadline for construction stormwater dischargers, the numeric action level is applicable upon the effective date of this General Permit.

c. Diazinon TMDLs

One TMDL for diazinon applies to construction stormwater dischargers. Diazinon is an organophosphate pesticide that does not sorb to sediment but is instead mobilized through soils by dissolving in water. Discharges of stormwater containing diazinon, can cause exceedances of water quality objectives for toxicity in aquatic life in inland surface and estuarine waters. Diazinon was once used in both agricultural and urban settings but has since been banned for non-agricultural uses by the California Department of Pesticide Regulation.

i. Chollas Creek Diazinon TMDL[155]

The San Diego Regional Water Quality Control Board adopted the Chollas Creek Diazinon TMDL on August 14, 2002, to address the impairment of the Chollas Creek Watershed due to diazinon.

- Source Analysis

  The Chollas Creek Diazinon TMDL identifies urban stormwater flows as a significant source of diazinon and lists the Construction General Permit as a means of regulating discharges of diazinon.[156] Therefore, construction stormwater dischargers covered by this General Permit are considered Responsible Dischargers. However, the TMDL did not include a separate waste load allocation assigned to construction stormwater discharges.

- Compliance Actions and Schedule

  Compliance with this General Permit is consistent with the requirements and assumptions of this TMDL's waste load allocation(s). No additional requirements are incorporated into this General Permit to implement the Chollas Creek Diazinon TMDL. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information about any exceedances of the waste load allocations.

d. Nutrients TMDLs

Seven Nutrient TMDLs apply to construction stormwater discharges and incorporate waste load allocations for one or more of the following pollutants: nitrogen compounds (e.g., ammonia, nitrate, nitrite) and phosphorous (e.g., orthophosphates). Excessive nutrient loading to water bodies and watersheds can cause eutrophic effects that negatively impact beneficial uses related to recreation, wildlife, and drinking water supply.

155 San Diego Regional Water Quality Control Board, Chollas Creek Diazinon Total Maximum Daily Load (August 14, 2002) <https://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/chollascreekdiazinon.html> [as of May 20, 2021]. (Chollas Creek Diazinon TMDL)

156 Chollas Creek Diazinon TMDL, p. 2 and 7.

i. Pajaro River Basin Nutrients TMDL[157]

The Central Coast Regional Water Quality Control Board adopted the Pajaro River Basin Nutrients TMDL on July 30, 2015, to address the discharges of nitrogen compounds and orthophosphate within the Pajaro River Basin. These exceedances of nutrient and nutrient-related water quality objectives can have negative impacts on beneficial uses such as municipal and domestic drinking water supply (MUN, GWR) and a range of aquatic habitats uses (WILD, COLD, WARM, MIGR, SPWN, BIOL, RARE).[158]

- Source Analysis

  Industrial and construction NPDES-permitted stormwater discharges were determined to be potential sources of ammonia, nitrate, and orthophosphate loading to receiving waters in the Pajaro River Basin.

- Waste Load Allocation Translation

  This Pajaro River Basin Nutrients TMDL assigns waste load allocations as concentration-based, single sample limits to construction stormwater dischargers for ammonia, nitrate, total nitrogen, and orthophosphate, to be met in the receiving waters. Therefore, dischargers covered under this General Permit are considered Responsible Dischargers for this TMDL, if they identify sources of these pollutants on their site through the required pollutant source assessment. The waste load allocation for un-ionized ammonia is applied to all streams within the Pajaro River Basin, while waste load allocations for nitrate, total nitrogen, and orthophosphate are specific to individual water bodies in the basin. The waste load allocations are translated from single sample limits to numeric action levels, as shown in Tables 15 through 24 below.

Table 15 – All Streams in Pajaro River Basin – Un-Ionized Ammonia Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Un-ionized Ammonia	0.025	0.025

157 Central Coast Regional Water Quality Control Board, Total Maximum Daily Loads for Nitrogen Compounds and Orthophosphate in Streams of the Pajaro River Basin (July 30, 2015), <https://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/docs/pajaro/nutrients/basin_plan_amend.pdf> [as of April 29, 2022] (Pajaro River Basin Nutrients TMDL)

158 Pajaro River Basin Nutrients TMDL, p. 1.

Table 16 – All Streams in Pajaro River Basin (with MUN Beneficial Uses) Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Nitrate-N	10	10

Table 17 – Pajaro River (All Reaches) and Pajaro River Estuary Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Nitrate-N	3.9	3.9
Dry-Weather Orthophosphate-P	0.14	0.14
Wet-Weather Nitrate-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

Table 18 – Corralitos Creek and Salsipuedes Creek (All Reaches) Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Nitrate-N	1.8	1.8
Dry-Weather Orthophosphate-P	0.14	0.14
Wet-Weather Nitrate-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

Table 19 – Beach Road Ditch and McGowan Ditch Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Nitrate-N	3.3	3.3
Dry-Weather Orthophosphate-P	0.14	0.14
Wet-Weather Nitrate-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

Table 20 – Llagas Creek (Downstream of Cheseboro Reservoir), Carnadero Creek, Uvas Creek, and Furlong Creek (All Reaches) Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Nitrate-N	1.8	1.8
Dry-Weather Orthophosphate-P	0.05	0.05
Wet-Weather Nitrate-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

Table 21 – San Juan Creek and West Branch of San Juan Creek (All Reaches) Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Nitrate-N	3.3	3.3
Dry-Weather Orthophosphate-P	0.12	0.12
Wet-Weather Nitrate-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

Table 22 – Tequisquita Slough Waste Load Allocation Translation

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Nitrate-N	2.2	2.2
Dry-Weather Orthophosphate-P	0.12	0.12
Wet-Weather Nitrate-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

Table 23 – Watsonville Slough, Harkins Slough, Gallighan Slough, and Struve Slough (All Reaches) Waste Load Allocation Translations

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Total Nitrogen-N	2.1	2.1
Dry-Weather Orthophosphate-P	0.14	0.14
Wet-Weather Total Nitrogen-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

Table 24 – Millers Canal (All Reaches) Waste Load Allocation Translations

Pollutant	Waste Load Allocation Single Sample Limit (mg/L)	Numeric Action Level (mg/L)
Dry-Weather Total Nitrogen-N	1.1	1.1
Dry-Weather Orthophosphate-P	0.04	0.04
Wet-Weather Total Nitrogen-N	8.0	8.0
Wet-Weather Orthophosphate-P	0.3	0.3

The Pajaro River Basin Nutrients TMDL assigns concentration-based waste load allocation to Responsible Dischargers for dry-weather discharges into the individual water bodies listed in Tables 15 through 24. Non-stormwater discharges are authorized in this General Permit if Order, Section IV.A terms and conditions are met to control the discharge of pollutants from the construction site. Order, Section IV.B prohibits all non-stormwater dischargers not authorized under Order, Section IV.A; therefore, all unauthorized non-stormwater dischargers must be either eliminated or have regulatory coverage under a separate NPDES permit. Authorized non-stormwater dischargers, as defined in this General Permit, are authorized because these discharges do not commingle with stormwater associated with construction activity. The Regional Water Board may impose additional requirements on non-stormwater dischargers if deemed necessary per site-specific analysis.

This General Permit requires that Responsible Dischargers meet the assigned wet-weather waste load allocations as numeric action levels at the construction site's discharge locations, rather than the applicable receiving waters as stated in the Pajaro River Basin Nutrients TMDL. The decision to establish numeric action levels, instead of numeric effluent limitations, was made considering that construction stormwater discharges are not expected to contribute a significant load of nutrients to receiving waters. An exceedance of the waste load allocation in the receiving waters would likely be attributed to sources other than construction stormwater discharges. Since different sources of stormwater runoff are often comingled, it is difficult to identify where the nutrient loading originates. Monitoring at the discharge location would be more indicative of an exceedance of the nutrient-related water quality objectives that is associated with a specific construction site. Furthermore, compliance monitoring at the receiving waters can be infeasible or impractical as Responsible Dischargers may have restricted access to or be far-removed from the compliance points.

- Compliance Actions and Schedule

  At the time the Pajaro River Basin Nutrient TMDL was written, NPDES stormwater-permitted construction sites were generally expected to be meeting the proposed waste load allocations through the requirements of the previous permit or any subsequent Construction General Permit. However, available information did not conclusively demonstrate that all construction sites were meeting the waste load allocations.[159] Therefore, in addition to complying with the requirements of this General Permit, Responsible Dischargers identifying on-site sources of ammonia, nitrate, total phosphorus, or total nitrogen shall compare all non-visible sampling and analytical results to the numeric action levels for the identified nutrients.

  If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to nutrient sources, are expected to meet the numeric action levels. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the numeric action levels.

  The Pajaro River Basin Nutrient TMDL's implementation schedule indicates that the waste load allocations are to be achieved within 25 years of the TMDL's effective date July 12, 2016. Therefore, the TMDL's compliance deadline is July 12, 2041. Since the compliance deadline is in the far future, compliance with this General Permit is considered compliance with the TMDL. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by July 12, 2041.

ii. Los Angeles Area Lakes Nutrients TMDL[160]

The U.S. EPA adopted the Los Angeles Area Lakes TMDL on March 26, 2012, to address the impairment of Peck Road Park Lake, Echo Park, Legg

159 Pajaro River Basin TMDL, p. 21.

160 United States EPA Region IX, Los Angeles Area Lakes Total Maximum Daily Loads for Nitrogen, Phosphorus, Mercury, Trash, Organochlorine Pesticides and PCBs (March 26, 2012),

Lakes, and Puddingstone Reservoir due to nitrogen and phosphorus. Peck Road Park Lake, Echo Park Lake, and Legg Lakes are located in the Los Angeles River watershed and Puddingstone Reservoir is located in the San Gabriel River watershed.

- Source Analysis

  Nutrient loadings into Peck Road Park Lake, Echo Park, Legg Lakes, and Puddingstone Reservoir originate from a variety of sources, including discharges from storm drain outlets containing construction stormwater discharges from sites within the watershed.

- Waste Load Allocation Translation

  The Los Angeles Area Lakes TMDL assigns concentration-based waste load allocations for nitrogen and phosphorus to Responsible Dischargers at the site's discharge location(s) for construction stormwater discharges into Peck Road Park Lake, Echo Park, Legg Lakes, and Puddingstone Reservoir. Therefore, dischargers covered under this General Permit are considered Responsible Dischargers for this TMDL. The waste load allocations for nitrogen and phosphorus differ depending on the receiving waters. The waste load allocations assigned to Responsible Dischargers for nitrogen and phosphorus are translated as shown in Table 25 and Table 26 below. The waste load allocations were set at monthly averages. The TMDL also states that "[a] three-year average will be used to evaluate compliance." Because of the variable nature of stormwater, monthly or yearly averages are not necessarily representative of pollutant loading, and the nitrogen waste load allocation was translated into a numeric action level.

  In addition to the explanation set forth in Section I.G.5.d of this Fact Sheet, implementation of the TMDL through numeric action levels is consistent with the assumptions and requirements of the waste load allocations because it is expected that compliance with this Permit will prevent exceedances of the numeric action levels. This TMDL was developed by U.S. EPA, and the Regional Board has not yet adopted an implementation plan. The TMDL also states, "if applicable water quality criteria for ammonia, dissolved oxygen and pH, and the chlorophyll-α target are met in the lake, then the total phosphorus and total nitrogen allocations are considered attained." Because an individual discharger

<https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Lakes/LALakesTMDLsEntireDocument.pdf> [as of May 20, 2021] (Los Angeles Area Lakes Nutrients TMDL)

cannot determine whether the applicable water quality criteria were being met at the time of their discharge, the waste load allocation is more appropriately translated into an action level. As further explained in Section I.G.5.d of this Fact Sheet, dischargers must take corrective actions in response to any numeric action level exceedance and this iterative process will protect water quality consistent with the requirements and assumptions set forth in this TMDL.

Table 25 – Total Nitrogen Waste Load Allocation Translation

Water Body	Waste Load Allocation Monthly Average (mg/L)	Numeric Action Level (mg/L)
Peck Road Park Lake	3.61	3.61
Echo Park Lake	1.33	1.33
Legg Lakes	1.8	1.8
Puddingstone Reservoir	2.0	2.0

Table 26 – Total Phosphorus Waste Load Allocation Translation

Pollutant	Waste Load Allocation Monthly Average (mg/L)	Numeric Effluent Limitation (mg/L)
Peck Road Park Lake	0.37	0.37
Echo Park Lake	0.16	0.16
Legg Lakes	0.64	0.64
Puddingstone Reservoir	0.4	0.4

This General Permit requires that Responsible Dischargers meet the assigned waste load allocations at the construction site's discharge location(s), which is consistent with requirements and assumptions of the TMDL.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of phosphorus and nitrogen shall compare all non-visible sampling and analytical results to the numeric action levels or numeric effluent limitations for the identified nutrients. If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels or numeric effluent limitations in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to nutrient sources, are expected to meet the numeric action levels or numeric effluent

limitations. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the numeric action levels or numeric effluent limitations.

The Los Angeles Regional Water Quality Control Board has not adopted an Implementation Plan or a compliance schedule for the Los Angeles Area Lakes TMDL. The numeric action levels and numeric effluent limitations described above are applicable upon the effective date of this General Permit.

iii. Los Angeles River Nutrients TMDL[161]

The Los Angeles Regional Water Quality Control Board adopted the Los Angeles River Nutrients TMDL on December 6, 2012, to address impairment of the Los Angeles River due to nitrogen compounds (ammonia, nitrite, and nitrate) and related effects (algae, pH, odor, and scum).

- Source Analysis

  The TMDL lists urban runoff as a point source which includes stormwater runoff from construction sites and other urban runoff sources such as industrial, municipal, and the California Department of Transportation.[162]

- Waste Load Allocation Translation

  The Los Angeles River Nutrients TMDL assigns concentration-based waste load allocations for nitrogen compounds to minor point sources, including construction stormwater runoff. Therefore, construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for this TMDL. The waste load allocations for ammonia are given as one-hour averages and thirty-day averages, for discharges into the Los Angeles River above LA-Glendale Water Reclamation Plant, Los Angeles River below LA-Glendale Water Reclamation Plant, or to tributaries discharging into the Los Angeles River above or below the LA-Glendale Water Reclamation Plant. Because stormwater is an intermittent discharge, only the acute one-hour averages are appropriate to apply to Responsible Dischargers. The waste load allocation translations from one-hour averages to numeric

161 Los Angeles Regional Water Quality Control Board, Los Angeles River Nitrogen Compounds and Related Effects TMDL (July 10, 2003), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R12-010_RB_BPA.pdf> [as of May 20, 2021] (Los Angeles River Nutrients TMDL)

162 Los Angeles River Nutrients TMDL, p. 5.

action levels for the three different reaches of the Los Angeles River are shown in Tables 27 through 29 below. The one-hour averages are appropriate to translate into action levels because of the variable nature of stormwater, and when the non-visible sampling requirements are triggered, the effluent sampling results are not averaged.

The Los Angeles River Nutrients TMDL assigns concentration-based waste load allocations for nitrate-nitrogen, nitrite-nitrogen, and nitrate-nitrogen plus nitrite-nitrogen as thirty-day averages to Responsible Dischargers into all reaches and tributaries of the Los Angeles River. The waste load allocations are translated to numeric action levels as shown in Table 30 below, since compliance with monthly averages is not appropriate to monitor stormwater due to its intermittent and variable nature.

The May 2021 draft of the Construction Stormwater General Permit reissuance proposed a translation of the ammonia, nitrate-nitrogen, nitrite-nitrogen, and nitrate-nitrogen plus nitrite-nitrogen waste load allocations into numeric effluent limitations as the waste load allocations were concentration-based and assigned at the point of discharge. However, the Permit was revised to implement nitrogen-based nutrient waste load allocations as numeric action levels because numeric action levels are consistent with the assumptions and requirements of the waste load allocations.

Implementation of the TMDL through numeric action levels is consistent with the assumptions and requirements of the waste load allocation because it is expected that compliance with this Permit will prevent exceedances of the waste load allocations. Consistent with the explanation set forth in Section I.G.5.d of this Fact Sheet, the critical condition identified in the TMDL is low flow conditions (p.8). The TMDL also indicates that a majority of nutrient loading originates from major point sources such as water reclamation plants and other publicly owned treatment works,[163] while sources in stormwater runoff requires further evaluation.

163 For example, the principal source of nitrogen compounds identified in this TMDL are the water reclamation plants, which contribute 84.1 percent of the total dry weather nitrogen load (p.3). The TMDL states that stormwater may also contribute nitrate loads and that further evaluation of these sources is set forth in the implementation plan, but the implementation plan does not provide further detail about stormwater as a source.

Table 27 – Los Angeles River above LA-Glendale WRP Waste Load Allocation Translation

Pollutant	Waste Load Allocation One-Hour Average (mg/L)	Numeric Action Level (mg/L)
Ammonia	4.7	4.7

Table 28 – Los Angeles River below LA-Glendale WRP Waste Load Allocation Translation

Pollutant	Waste Load Allocation One-Hour Average (mg/L)	Numeric Action Level (mg/L)
Ammonia	8.7	8.7

Table 29 – Los Angeles River Tributaries Waste Load Allocation Translation

Pollutant	Waste Load Allocation One-Hour Average (mg/L)	Numeric Action Level (mg/L)
Ammonia	10.1	10.1

Table 30 – Los Angeles River Tributaries Waste Load Allocation Translation

Pollutant	Translated Numeric Action Level (mg/L)
Nitrate-Nitrogen	8.0
Nitrite-Nitrogen	1.0
Nitrate plus Nitrite-Nitrogen	8.0

This General Permit requires that Responsible Dischargers meet the numeric action levels at the construction site's discharge location(s), which is consistent with requirements and assumptions of the Los Angeles River Nutrients TMDL.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of ammonia, nitrate, or nitrite shall compare all non-visible sampling and analytical results to the numeric action levels for the identified nutrients. If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to nitrogen compound sources, are expected to meet the assigned numeric action levels. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the numeric action levels.

The Los Angeles River Nutrients TMDL's final compliance deadline for the waste load allocations was March 23, 2004. Since this compliance deadline has already passed, the numeric action levels are applicable upon the effective date of this General Permit.

iv. Machado Lake Nutrients TMDL[164]

The Los Angeles Regional Water Quality Control Board adopted the Machado Lake Nutrients TMDL on May 1, 2008, to address the impairment of Machado Lake due to eutrophication, algae, ammonia, and odors caused by an excess of nutrient loadings. These pollutants can have negative impacts on the beneficial uses of Machado Lake including recreation (REC-1 and REC-2), aquatic wildlife (WARM, WILD, RARE, and WET) and water supply (MUN).

- Source Analysis

  Stormwater discharges from the municipal separate storm sewer system (MS4), California Department of Transportation, and general construction and industrial discharges are identified has point sources of nutrients into Machado Lake.

- Waste Load Allocation Translation

  The Machado Lake Nutrients TMDL assigns waste load allocations as concentration-based monthly averages to construction stormwater dischargers for total phosphorus and total nitrogen based on in-lake concentrations. Therefore, dischargers covered under this General Permit are considered Responsible Dischargers for this TMDL. The waste load allocations apply to discharges to Machado Lake or through the following subdrainage systems: Drain 553, Wilmington Drain, Project 77/510, and Walteria Lake. The waste load allocations are translated to numeric action levels, as shown in Table 31 below, because this TMDL assigned these waste load allocations in the receiving water (in-lake) instead of at the point of discharge from the construction site. This TMDL assigned the waste load allocations as monthly averages; however, precipitation events are intermittent and variable. Compliance with the waste load allocations based on monthly averages is inconsistent with the monitoring and reporting requirements in this General Permit.

164 Los Angeles Regional Water Quality Board, Total Maximum Daily Load for Eutrophic, Algae, Ammonia, and Odors (Nutrient) in Machado Lake (May 1, 2008), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2008-006_RB_BPA.pdf> [as of May 20, 2021] (Machado Lake Nutrients TMDL)

Table 31 – Machado Lake Nutrient Waste Load Allocations Translation

Pollutant	Waste Load Allocation Monthly Average (mg/L)	Numeric Action Level (mg/L)
Total Phosphorus	0.1	0.1
Total Nitrogen	1.0	1.0

This General Permit requires Responsible Dischargers to meet the numeric action levels at the construction site's discharge location(s), which is consistent with requirements and assumptions of the TMDL.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of phosphorus and nitrogen shall compare all non-visible sampling and analytical results to the numeric action levels for the identified nutrients. If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to nutrient sources, are expected to meet the numeric action levels. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the numeric action levels.

  The Machado Lake Nutrients TMDL's effective date was March 11, 2009, with a final compliance deadline set for September 11, 2018. Since the compliance deadline for this TMDL has passed, the discharger shall comply with the numeric action levels by the effective date of this General Permit.

v. Santa Clara River Nitrogen Compounds TMDL[165]

The Los Angeles Regional Water Quality Control Board adopted the Santa Clara River Nitrogen Compounds TMDL on August 7, 2003, to address nutrient-related impairment of Santa Clara River Reach 3 and Reach 7. In specific, biostimulatory substances such as ammonia, nitrate, and nitrite can lead to excessive algae growth and low dissolved oxygen in the receiving water body.

165 Los Angeles Regional Water Quality Control Board, Santa Clara River Nitrogen Compounds TMDL (August 7, 2003), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2003-011_RB_BPA.pdf> [as of April 28, 2022]

- Source Analysis

  The primary sources of these nitrogen compounds in the Santa Clara River can be attributed to local water reclamation and treatment plants. However, stormwater discharges were also identified as potential point sources of the nitrogen compounds.

- Waste Load Allocation Translation

  The Santa Clara River Nitrogen Compounds TMDL assigns concentration-based waste load allocations for ammonia and nitrate plus nitrite as nitrogen to construction stormwater sources regulated under NPDES permits. Therefore, construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for this TMDL.

  Ammonia and nitrate plus nitrite as nitrogen waste load allocations are established to address both acute effects (one-hour average concentration) and chronic effects (30-day average concentration) on aquatic life. Because stormwater is an intermittent discharge, only the acute one-hour average waste load allocations for ammonia are appropriate to apply to Responsible Dischargers. The translation of one-hour average waste load allocations to numeric action levels for the two reaches of the Santa Clara River are shown in Table 32 and Table 33 below. The one-hour average waste load allocations appropriately translate into numeric action levels due to the variable nature of stormwater. Nitrate plus nitrite as nitrogen waste load allocations were not translated as they were only established as 30-day averages.

Table 32 – Santa Clara River Reach 3 Ammonia as Nitrogen Waste Load Allocation Translation

Pollutant	Waste Load Allocation One-Hour Average (mg/L)	Numeric Action Level (mg/L)
Ammonia	4.2	4.2

Table 33 – Santa Clara River Reach 7 Ammonia as Nitrogen Waste Load Allocation Translation

Pollutant	Waste Load Allocation One-Hour Average (mg/L)	Numeric Action Level (mg/L)
Ammonia	5.2	5.2

This General Permit requires that Responsible Dischargers comply with the numeric action levels at the construction site discharge location(s), consistent with requirements and assumptions of the TMDL.

The May 2021 draft of the Construction Stormwater General Permit reissuance proposed a translation for the ammonia waste load

allocations into numeric effluent limitations as the waste load allocations were concentration-based and assigned at the point of discharge. However, the Permit was revised to implement nitrogen-based nutrient waste load allocations as numeric action levels because numeric action levels are consistent with the assumptions and requirements of the waste load allocations.

As set forth in Section I.G.5.d of this Fact Sheet, the source analysis found that the principal source of ammonia, nitrite, and nitrate to the Santa Clara River is discharges from water reclamation plants and publicly owned public treatment works (BPA, p.2). The TMDL also acknowledged that stormwater discharge may contribute nitrate loads. But the allocations were set at the water quality objectives for receiving waters. The most critical conditions for water quality in the Santa Clara River are low-flow conditions, in particular at the end of the dry season (p. 72).

The TMDL also noted that "mass emission monitoring data conducted for MS4 NPDES Permit compliance indicate that the MS4 discharges are below the waste load allocation in both wet and dry weather samples."[166] (p.62) CGP dischargers subject to this TMDL are located within a MS4.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of ammonia, nitrate, and nitrite shall compare all non-visible sampling and analytical results to the numeric action levels for the identified nutrients. If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to nitrogen compound sources, are expected to meet the numeric action levels. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the numeric action levels.

  The Santa Clara River Nitrogen Compounds TMDL's compliance deadline for the waste load allocations was March 23, 2004. Since this

166 Staff Report, p. 62, available at https://www.waterboards.ca.gov/losangeles/board_decisions/basin_plan_amendments/technical documents/2003-011/03_0523/StaffReport06-16.pdf.

compliance deadline has passed, the numeric effluent limitations are applicable upon the effective date of this General Permit.

vi. Ventura River Algae TMDL[167]

The Los Angeles Regional Water Quality Control Board adopted the Ventura River Algae TMDL on December 6, 2016, to address nutrient-related impairments in the Ventura River and its tributaries. Nutrient-related listings negatively impact beneficial uses such as water contact recreation, non-water contact recreation, warm and cold freshwater habitat, wetland habitat, rare/threated/endangered species habitat, migration of aquatic organisms, and spawning.

- Source Analysis

  Discharges conveyed via the municipal separate storm sewer (MS4), including stormwater and non-stormwater discharges, are estimated to contribute 21.3 percent of nutrient loading in dry weather and 28.3 percent in wet weather.

- Waste Load Allocation Translation

  The Ventura River Algae TMDL assigns concentration-based waste load allocations for nitrogen and phosphorus to construction stormwater dischargers during dry and wet-weather discharges. Therefore, construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for this TMDL. No translation is necessary for the dry and wet-weather waste load allocations as they were already expressed as concentration-based limitations.

  1) Dry-Weather Waste Load Allocations

     The Ventura River Algae TMDL assigns concentration-based waste load allocations for dry-weather total nitrogen and total phosphorus, shown in Table 34 below, with compliance assessed by averaging two grab samples.

     Discharges that occur during dry-weather conditions are referred to as non-stormwater and only are authorized in this General Permit if the conditions in Order Section IV.A are met to control the discharge of pollutants from the construction site. Authorized non-stormwater discharges, as defined in this General Permit, are authorized

167 Los Angeles Regional Water Quality Control Board, Total Maximum Daily Load for Algae, Eutrophic Conditions, and Nutrients in the Ventura River and its Tributaries (December 6, 2012) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R12-011_RB_BPA.pdf> [as of April 28, 2022] (BPA)

because these discharges do not commingle with stormwater associated with construction activity. Order Section IV.B prohibits all NSWDs not authorized under Section IV.A; therefore, all unauthorized NSWDs must be either eliminated or have regulatory coverage under a separate NPDES permit. A dry-weather discharge to the Ventura River watershed with concentrations greater than the total nitrogen and total phosphorus waste load allocations would therefore be prohibited. The Regional Water Board may impose additional requirements on NSWDs if deemed necessary per site-specific analysis.

Table 34 – Ventura River Algae Dry-Weather Waste Load Allocations

Pollutant	Total Nitrogen Waste Load Allocation (mg/L)	Total Phosphorus Waste Load Allocation (mg/L)
Dry weather	1.15	0.115

2) Wet-Weather Waste Load Allocations

The wet-weather waste load allocations for nitrate plus nitrite as nitrogen, or total nitrogen where indicated, in Table 35 below are expressed as event mean concentrations or the average concentration for all samples taken per precipitation event resulting in discharge.

Table 35 – Ventura River Algae Wet-Weather Waste Load Allocations

Reach	Nitrate Plus Nitrate as Nitrogen Numeric Action Levels (mg/L)
Estuary	*
Reach 1	*
Reach 2	10
Cañada Larga	10
Reach 3	5
San Antonio Creek	5
Reach 4	5
Reach 5	5

* The waste load allocations for the Estuary and Reach 1 are for total nitrogen at a concentration of 7.4 mg/L

The May 2021 draft of the Construction Stormwater General Permit reissuance proposed a translation for nitrate-nitrogen plus nitrite-nitrogen and total nitrogen waste load allocations into numeric effluent limitations as the waste load allocations were concentration-based and assigned at the point of discharge. However, the Permit was revised to implement nitrogen-based nutrient waste load

allocations as numeric action levels because numeric action levels are consistent with the assumptions and requirements of the waste load allocations.

The TMDL states that, "[t]he discharges from the general NPDES permits are intermittent and considered negligible for the purposes of this source assessment." (Staff Report, p.40)[168] Accordingly, "[t]he loadings from the general NPDES permits [were] not quantified" in the source assessment. (Staff Report, p.40) According to the TMDL, the critical condition for the TMDL is dry weather, "and it is the dry-weather loading that results in water quality impairments." (BPA, p.5) "The watershed nutrient wet-weather loads are generally delivered directly to the ocean and thus do not contribute to exceedance of the biostimulatory substances…") (BPA, p.8) "Based on the linkage analysis, wet-weather loads do not have a significant impact on receiving water quality in the Ventura River and its tributaries or the Estuary and biostimulatory objectives are attained." (Staff Report, p.79) The TMDL acknowledged that maintaining existing discharge quality would ensure that no further loading would occur in the receiving water. (BPA, p.8) The wet-weather loads were set to attain site-specific water quality objectives, (Staff Report, p.79) but "[f]or Reach 1 and Estuary, Wet-weather waste load allocations for stormwater sources are equal to existing water quality in stormwater discharges." (BPA, p.6) This suggests that the TMDL assumed that reductions in stormwater discharges were not necessary. Dry-weather waste load allocations were set at in-stream nutrient concentrations to meet biomass numeric targets. (Staff Report, p.76) All these statements support implementation of the TMDL through numeric action levels.

Although the implementation language specifies that the TMDL should be implemented as numeric water quality-based effluent limitations, the underlying assumptions contained in the TMDL support implementation via numeric action levels.

168 Los Angeles Regional Water Quality Control Board, Algae, Eutrophic Conditions, and Nutrients Total Maximum Daily Loads for Ventura River and Its Tributaries (December 6, 2012) <https://www.waterboards.ca.gov/losangeles/board_decisions/basin_plan_amendments/technical_documents/73_New/Docs/Mar%202013/Staff%20report_Final%20120612.pdf> [as of June 28, 2022] (Staff Report)

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of nitrogen and/or phosphorus shall compare all non-visible sampling and analytical results to the numeric action level for the identified nutrients, when a wet-weather discharge occurs. If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to nitrogen and phosphorous sources, are expected to meet the assigned numeric action levels. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the numeric action levels.

  The Ventura River Algae TMDL's compliance deadline for the waste load allocations was June 28, 2013. Since the compliance deadline has passed, the numeric action levels are applicable upon the effective date of this General Permit.

vii. San Diego Creek and Newport Bay Watershed Nutrients TMDL[169]

The Santa Ana Regional Water Quality Control Board adopted the San Diego Creek and Newport Bay Watershed Nutrients TMDL in 1998 to address nutrient-related impairments in Newport Bay, San Diego Creek, and its tributaries. Nutrients contribute to seasonal algal blooms that negatively impact recreational, aesthetic, and wildlife habit beneficial uses in these waters.

- Source Analysis

  The predominant source of nutrients are the tailwaters from agricultural crops and from commercial nurseries, however, runoff from construction sites can also contribute to nutrient loading through the erosion of sediment containing phosphorus.

169 Santa Ana Regional Water Quality Control Board, Nutrient TMDL for the Newport Bay/San Diego Creek Watershed (1998) <https://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/> [as of May 20, 2021] (San Diego Creek and Newport Bay Watershed Nutrients TMDL)

- Waste Load Allocation Translation

  Construction stormwater dischargers are assigned an annual, mass-based waste load allocation for total phosphorus, aiming to reduce the loading of phosphorus by 50 percent. Therefore, construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for this TMDL if they identify sources of phosphorus on their site via the required pollutant source assessment. All construction sites were expected to achieve compliance with the annual waste allocation of 12,810 lbs/year total phosphorus by 2007.

  Requiring Responsible Dischargers to directly implement the waste load allocation and sample for the pollutants(s) would be impractical, costly, and not aligned with the requirements of this General Permit. It is infeasible to translate a mass-based annual waste load allocation applicable to all construction stormwater discharges to an effluent limitation that is applicable to an individual site. As mentioned in the source analysis, phosphorus loadings from construction stormwater discharges are in particulate form and associated with wet weather. Therefore, the following will address this TMDL:

  1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

  2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of phosphorus through the required pollutant source assessment are to implement BMPs specific to preventing or controlling stormwater exposure to the sources of phosphorus. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.D.2. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations.

  The San Diego Creek and Newport Bay Watershed Nutrients TMDL has waste load allocation compliance deadline set in 2007 for construction sites. Since this compliance deadline has passed, the compliance

actions are applicable to the Responsible Dischargers upon the effective date of this General Permit.

e. Sediment TMDLs

Twenty-five (25) sediment TMDLs are translated for this General Permit. Sediment is the loose sand, clay, silt, and other soil particles that settle at the bottom of a body of water. Sediment can be detrimental to aquatic life by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies.[170] Sediment can be transported in construction site discharges due to excessive erosion.[171] At construction sites, the rate of erosion is increased due to increased amount of exposed and disturbed soil. Therefore, construction sites that discharge into the watersheds of these water bodies are considered Responsible Dischargers and shall comply with the requirements set forth in these TMDLs.

i. Albion River Sediment TMDL[172]

The United States Environmental Protection Agency (U.S. EPA) established the Albion River Sediment TMDL on December 20, 2001, to address the impairment on the Albion River and its tributaries due to sediment.

The implementation requirements for the Albion River Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy[173] adopted on November 29, 2004. The North Coast Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[174] Construction

170 California Stormwater Quality Association, Construction Stormwater Best Management Practice Handbook (August 2011), <http://www.casqa.org/> [as of May 20, 2021] (CASQA Construction BMP Handbook)

171 CASQA Construction BMP Handbook, p. 1-7.

172 United States Environmental Protection Agency Region IX, Albion River Sediment TMDL for Sediment (December 2001), <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/albion_river/pdf/albionfinaltmdl.pdf> [as of May 20, 2021] (Albion River Sediment TMDL)

173 North Coast Regional Water Quality Control Board, Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters in the North Coast Region (November 29, 2004). <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/sediment_tmdl_implementation/> [as of May 20, 2021] (North Coast Sediment TMDL Implementation Policy)

174 North Coast Sediment TMDL Implementation Policy, p. 3.

stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Albion River Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no significant point sources of sediment in the Albion River watershed.[175]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Quality Control Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

ii. Big River Sediment TMDL[176]

The U.S. EPA established the Big River Sediment TMDL on December 20, 2001, to address the impairment of Big River Sediment TMDL and its tributaries due to sediment.

The implementation requirements for the Big River Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[177] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Big River Sediment TMDL.

175 Albion River Sediment TMDL, p. 35.

176 United States Environmental Protection Agency Region IX, Big River Total Maximum Daily Load for Sediment (December 2001) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/big_river/pdf/bigfinaltmdl.pdf> [as of May 20, 2021] (Big River Sediment TMDL)

177 North Coast Sediment TMDL Implementation Policy, p. 3.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no significant point sources of sediment in the Big River Sediment TMDL watershed.[178]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

iii. Eel River – Lower Main Sediment TMDL[179]

The U.S. EPA established the Eel River – Lower Main Sediment TMDL on December 18, 2007, to address the impairment of the Lower Eel River and its tributaries due to sediment.

The implementation requirements for the Eel River – Lower Main Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy[180] adopted on November 29, 2004. The North Coast Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[181] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Eel River – Lower TMDL.

178 Big River Sediment TMDL, p. 36.

179 United States Environmental Protection Agency Region IX, Lower Eel River Total Maximum Daily Loads for Temperature and Sediment (December 18, 2007) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_lower/pdf/LER-TMDL-final-121807-signed.pdf> [as April 28, 2022] (Eel River-Lower Main Sediment TMDL)

180 North Coast Regional Water Quality Control Board, Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters in the North Coast Region (November 29, 2004) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/sediment_tmdl_implementation/> [as of May 20, 2021] (North Coast Sediment TMDL Implementation Policy)

181 North Coast Sediment TMDL Implementation Policy, p. 3.

- Waste Load Allocation Translation

  The source analysis supporting the allocations in Table 36 evaluated sediment loading at a subwatershed scale. The source analysis did not attempt to distinguish sediment loading at the scale of specific land ownerships nor did the analysis distinguish loading between land areas subject to NPDES regulation, or land areas not subject to NPDES regulation. Therefore, this TMDL includes separate but identical load allocations for non-point sources and waste load allocations for diffuse NPDES-permitted sources for each subarea. The diffuse NPDES-permitted pollutant sources are addressed in the statewide NPDES municipal stormwater permit for the California Department of Transportation, this statewide Construction Stormwater General Permit, the statewide Industrial Stormwater General Permit, and the City of Fortuna NPDES municipal stormwater permit.[182]

Table 36 – Sediment Load Allocations for the Lower Eel River Watershed and its Tributaries

Sediment Source	Load Allocation (tons/mi^2/year)	1955-2003 Loading (tons/mi^2/year)	Percent Reduction
Road (Episodic)	9	43	80 percent
Road (Chronic)	17	115	85 percent
Bank Erosion	6	21	70 percent

Construction sites covered by this General Permit are considered to be human related sources of sediment to the watershed and therefore, Responsible Dischargers. Responsible Dischargers are not to exceed the load allocations assigned to roads (episodic and chronic) and bank erosion, as the allocations assigned to timber harvest and skid trails do not typically apply to construction sites. Responsible Dischargers calculate their annual loading by multiplying the area of the site with these load allocations.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

182 Eel River – Lower Main Sediment TMDL, p. 64.

iv. Eel River – Middle Fork Sediment TMDL[183]

The U.S. EPA established the Eel River – Middle Fork Sediment TMDL in December 2003 to address the impairment of the Middle Fork Eel River and tributaries due to sediment.

The implementation requirements for the Eel River – Middle Fork Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy adopted on November 29, 2004. The North Coast Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[184] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Eel River – Middle Fork Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL identified discharges under the Construction General Permit and Caltrans Statewide Permit as current and prospective point sources that may discharge sediment in the watershed. Discharges from these point sources cannot be readily determined and possible loading from these sources is not distinguished from general management-related loading in the source analysis. Therefore, this TMDL set the load allocations for nonpoint sources to also represent waste load allocations for point sources that would be covered by general NPDES permits.[185]

Table 37 – Sediment Load Allocations for the Middle Fork Eel River Watershed and its Tributaries (tons/mi^2/yr)

Sediment Source	Black Butte	Elk Creek	Round Valley	Upper Middle Fork	Williams/ Thatcher	Basin-wide Load
Small Management Sources	7	41	9	9	19	23
Percent Reduction	0 percent	32 percent	95 percent	0 percent	89 percent	70 percent

183 United States Environmental Protection Agency Region IX, Final Middle Fork Eel River Total Maximum Daily Loads for Temperature and Sediment (December 2003) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_middle_fork/pdf/tmdl.pdf> [as of April 28, 2022] (Eel River – Middle Fork Sediment TMDL)

184 North Coast Sediment TMDL Implementation Policy.

185 Eel River – Middle Fork Sediment TMDL, p. 45.

The construction sites covered by this General Permit are considered to be human related sources of sediment to the watershed. Responsible Dischargers are not to exceed the load allocations or reductions assigned to "small management sources." These allocations vary by subwatershed, as noted in Table 37 above. Responsible Dischargers calculate their annual loading by multiplying the area of the site with the appropriate load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

v. Eel River – Middle Main Sediment TMDL[186]

The U.S. EPA established the Eel River – Middle Main Sediment TMDL on December 31, 2005, to address the impairment of the Middle Main Eel River (from Dos Rios to the South Fork Eel River) and its tributaries due to sediment. A portion of the watershed is part of the Round Valley Indian Country. This TMDL does not apply to lands under tribal jurisdiction.

The implementation requirements for the Eel River – Middle Main Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[187] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Eel River – Middle Main Sediment TMDL.

186 United States Environmental Protection Agency Region IX, Final Middle Main Eel River and Tributaries Total Maximum Daily Loads for Temperature and Sediment (December 31, 2005) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_middle_main/pdf/mainmdl-eel-final.pdf> [as of April 28, 2022] (Eel River – Middle Main Sediment TMDL)

187 North Coast Sediment TMDL Implementation Policy.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) for construction sites because this source is not significant.[188]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

vi. Eel River – North Fork Sediment TMDL[189]

The U.S. EPA established the Eel River – North Fork Sediment TMDL on December 30, 2002, to address the impairment of the North Fork Eel River and its tributaries due to sediment. These TMDLs do not apply to lands under tribal jurisdiction.

The implementation requirements for the Eel River – North Fork Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy adopted on November 29, 2004. The North Coast Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[190] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Eel River – North Fork Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no significant point sources of sediment in the North Fork Eel River watershed.[191]

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188 Eel River – Middle Main Sediment TMDL, p. 45.

189 United States Environmental Protection Agency Region IX, Final North Fork Eel River Total Maximum Daily Loads for Sediment and Temperature (December 30, 2002) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_north_fork/pdf/final.pdf> [as of April 28, 2022] (Eel River – North Fork Sediment TMDL)

190 North Coast Sediment TMDL Implementation Policy.

191 Eel River – North Fork Sediment TMDL, p. 23.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

vii. Eel River – Upper Main Sediment TMDL[192]

The U.S. EPA established the Eel River – Upper Main Sediment TMDL on December 29, 2004, to address the Impairment of the Upper Main Eel River (including Tomki Creek, Outlet Creek, and Lake Pillsbury) and its tributaries due to sediment.

The implementation requirements for the Eel River – Upper Main Sediment TMDL in this General Permit are based on the North Coast TMDL Implementation Policy adopted on November 29, 2004. The North Coast Sediment Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[193] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Eel River – Upper Main Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL identified discharges under the Construction General Permit and Caltrans Statewide Permit as current and prospective point sources that may discharge sediment in the watershed and are therefore Responsible Dischargers. Discharges from these point sources cannot be readily determined and possible loading from these sources is not distinguished from general management-related loading in the source analysis. Therefore, this TMDL set the load allocations for nonpoint

192 United States Environmental Protection Agency Region IX, Final Upper Main Eel River and Tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury) Total Maximum Daily Loads for Temperature and Sediment (December 29, 2004) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_upper_main/pdf/uer-tmdl-final-12-28.pdf> [as of May 20, 2021] (Eel River – Upper Main Sediment TMDL)

193 North Coast Sediment TMDL Implementation Policy.

sources to also represent waste load allocations for point sources that would be covered by general NPDES permits.[194]

Table 38 – Sediment Load Allocations for the Upper Main Eel River Watershed and its Tributaries

Sediment Source	Load Allocation (tons/mi^2/year)	1940-2004 Loading (tons/mi^2/year)	Percent Reduction
Large Features (>3,000 yds^3)	36	71	49 percent
Road Related (Small Features)	14	28	50 percent

Construction sites covered by this General Permit are considered to be human (land management) related sources of sediment to the watershed. Responsible Dischargers are not to exceed the load allocations assigned to road related projects or "large features" as this General Permit regulates projects that disturb an acre or greater of land. Responsible Dischargers calculate their annual loading by multiplying the area of the site with these load allocations.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

viii. Eel River – South Fork Sediment TMDL[195]

The U.S. EPA established the Eel River – South Fork TMDL on December 16, 1999, to address the impairment of the South Fork Eel River and its tributaries due to sediment. These TMDLs do not apply to lands under tribal jurisdiction.

The implementation requirements for the Eel River – South Fork Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy adopted on November 29, 2004. The North Coast Sediment TMDL Implementation Policy requires the use of existing

194 Eel River – Upper Main Sediment TMDL, p. 54.

195 United States Environmental Protection Agency Region IX, South Fork Eel River Total Maximum Daily Loads for Sediment and Temperature (December 16, 1999) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_south_fork/pdf/eel.pdf> [as of April 28, 2022] (Eel River – South Fork Sediment TMDL)

permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[196] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Eel River – South Fork Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no significant point sources of sediment in the North Fork Eel River watershed.[197]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

ix. Gualala River Sediment TMDL[198]

The U.S. EPA established the Gualala River Sediment TMDL in December 2001 to address the impairment of the Gualala River and its tributaries due to sediment.

The implementation requirements for the Gualala River Sediment TMDL in this General Permit are based on the North Coast TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[199] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Gualala River Sediment TMDL.

196 North Coast Sediment TMDL Implementation Policy.

197 Eel River – North Fork Sediment TMDL, p. 23

198 United States Environmental Protection Agency Region IX, Gualala River Total Maximum Daily Load for Sediment (December, 2001) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/gualala_river/110707/gualalafinaltmdl.pdf> [as of May 20, 2021] (Gualala River Sediment TMDL)

199 North Coast Sediment TMDL Implementation Policy.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no significant individual point sources of sediment in the Gualala River watershed.[200]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

x. Mad River Sediment TMDL[201]

The U.S. EPA established the Mad River Sediment TMDL on December 21, 2007, to address the impairment of the Mad River and its tributaries due to sediment.

The implementation requirements for the Mad River Sediment TMDL in this General Permit are based on the North Coast TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[202] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Mad River Sediment TMDL.

- Waste Load Allocation Translation

  The source analysis evaluated sediment loading at a subwatershed scale. The source analysis did not attempt to distinguish sediment loading at the scale of specific land ownerships nor did it distinguish loading between land areas subject to NPDES regulation and land areas not subject to NPDES regulation. Therefore, this TMDL includes separate but identical load allocations for nonpoint sources and waste

200 Gualala River Sediment TMDL, p. 17.

201 United States Environmental Protection Agency Region IX, Mad River Total Maximum Daily Loads for Sediment and Turbidity (December 21, 2007) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/mad_river/pdf/Mad-TMDL-122107-signed.pdf> [as of May 20, 2021] (Mad River Sediment TMDL)

202 North Coast Sediment TMDL Implementation Policy.

load allocations for diffuse point sources. Construction activities permitted under this General Permit are considered diffuse point sources and are therefore Responsible Dischargers for this TMDL. This TMDL assigns a waste load allocation for permitted construction activities equivalent to the load allocation for roads.[203]

Table 39 – Sediment Load Allocations for the Mad River Watershed

Sediment Source	Load Allocation (tons/mi^2/year)	1940-2004 Loading (tons/mi^2/year)	Percent Reduction
Roads (Total Sediment)	174	1,540	89 percent

Responsible Dischargers are not to exceed the load allocations for total sediment. Responsible Dischargers are required to calculate their project site annual loading by multiplying the area of the site with this load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocation. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xi. Mattole River Sediment TMDL[204]

The U.S. EPA established the Mattole River Sediment TMDL on December 30, 2002, to address the impairment of the Mattole River and its tributaries due to sediment.

The implementation requirements for the Mattole River Sediment TMDL in this General Permit are based on the North Coast TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[205] The discharge of soil, silt, bark,

203 Mad River Sediment TMDL, p. 91.

204 United States Environmental Protection Agency Region IX, Mattole River Total Maximum Daily Loads for Sediment and Temperature (December 30, 2002) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/mattole_river/110707/mattole.pdf> [as of May 20, 2021] (Mattole River Sediment TMDL)

205 North Coast Sediment TMDL Implementation Policy.

sawdust, or other organic and earthen material from construction activities in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.[206] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Mattole River Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no point sources of sediment in the Mattole River watershed.[207]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xii. Navarro River Sediment TMDL[208]

The U.S. EPA established the Navarro River Sediment TMDL in December 2000 to address the impairment of the Navarro River and its tributaries due to sediment.

The implementation requirements for the Navarro River Sediment TMDL in this General Permit are based on the North Coast TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[209] The discharge of soil, silt, bark, sawdust, or other organic and earthen material from construction activities in quantities deleterious to fish, wildlife, or other beneficial uses is

206 Mattole River Sediment TMDL p. 9.

207 Mattole River Sediment TMDL, p. 41.

208 United States Environmental Protection Agency Region IX, Navarro River Total Maximum Daily Loads for Temperature and Sediment (December 2000) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/navarro_river/110708/navarro.pdf> [as of May 20, 2021] (Navarro River Sediment TMDL)

209 North Coast Sediment TMDL Implementation Policy.

prohibited.[210] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Navarro River Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no known point sources of sediment in the Navarro River and its tributaries.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xiii. Noyo River Sediment TMDL[211]

The U.S. EPA established the Noyo River Sediment TMDL on December 16, 1999, to address the impairment of Noyo River due to sediment.

The implementation requirements for the Noyo River Sediment TMDL in this General Permit are based on the North Coast TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[212] The discharge of soil, silt, bark, sawdust, or other organic and earthen material from construction activities in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.[213] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Noyo River Sediment TMDL.

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210 Navarro River Sediment TMDL, p. 3.

211 United States Environmental Protection Agency Region IX, Noyo River Total Maximum Daily Load for Sediment (December 16, 1999) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/noyo_river/pdf/noyo.pdf> [as of May 20, 2021] (Noyo River Sediment TMDL)

212 North Coast Sediment TMDL Implementation Policy.

213 Noyo River Sediment TMDL, p. 10.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources equal to zero (0) because there are no point sources of sediment in Noyo River.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xiv. Scott River Sediment TMDL[214]

The North Coast Regional Water Quality Control Board adopted the Scott River Sediment TMDL on December 7, 2005, to address the impairment of Scott River due to sediment.

The implementation requirements for the Scott River Sediment TMDL in this General Permit are based on the Scott River TMDL Action Plan[215] which describes the specific implementation actions necessary to fulfill the obligations of the Sediment TMDL Implementation Policy. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[216] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Scott River Sediment TMDL.

214 United States Environmental Protection Agency Region IX, Scott River Total Maximum Daily Load for Sediment (December 7, 2005) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/scott_river/ > [as of May 20, 2021] (Scott River Sediment TMDL)

215 North Coast Regional Water Quality Control Board, Action Plan for the Scott River Sediment and Temperature TMDLs (August 11, 2006) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/scott_river/060307/bpl/Basin_Plan_Language.pdf> [as of May 20, 2021] (Scott River TMDL Action Plan)

216 North Coast Sediment TMDL Implementation Policy.

- Waste Load Allocation Translation

  Construction sites covered by this General Permit are considered to be anthropogenic related sources of sediment to the watershed. Responsible Dischargers are not to exceed the sum of load allocations assigned to road surface erosion and large or small discrete streamside features, which totals to 69 tons/mi^2/year.[217] Responsible Dischargers calculate their annual loading by multiplying the area of the site with this load allocation.

- Compliance Actions and Schedule

  The Scott River TMDL Action Plan describes the implementation actions necessary to achieve the TMDL within 40 years of U.S. EPA approval of the action plan or September 8, 2046. Since the compliance deadline is in the far future, compliance with this General Permit is considered compliance with the TMDL. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by September 8, 2046. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocation.

xv. Ten Mile River Sediment TMDL[218]

The U.S. EPA established the Ten Mile River Sediment TMDL in December 2000 to address the impairment of Ten Mile River due to sediment.

The implementation requirements for the Ten Mile River Sediment TMDL in this General Permit are based on the North Coast TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[219] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Ten Mile River Sediment TMDL.

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217 Scott River TMDL Action Plan, p. 4-5.00.

218 United States Environmental Protection Agency Region IX, Ten Mile River Total Maximum Daily Load for Sediment (December 2000) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/ten_mile_river/pdf/tenmile.pdf> [as of May 20, 2021] (TMDL Mile River Sediment TMDL)

219 North Coast Sediment TMDL Implementation Policy.

- Waste Load Allocation Translation

  This TMDL set a sediment waste load allocation for point sources at zero (0) as there are no point sources of discharge in the basin.[220]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Quality Control Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xvi. Trinity River Sediment TMDL[221]

The U.S. EPA established the Trinity River Sediment TMDL on December 20, 2001, to address the impairment of the Trinity River and its tributaries due to sediment. This TMDL does not apply to lands under tribal jurisdiction and South Fork Trinity River.

The implementation requirements for the Trinity River Sediment TMDL in this General Permit are based on the Sediment TMDL Implementation Policy adopted on November 29, 2004. The Sediment TMDL Implementation Policy directs the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[222]

- Waste Load Allocation Translation

  This TMDL identified discharges under the Construction General Permit from construction sites larger than 5 acres as current and prospective point sources that may discharge sediment in the watershed and are therefore considered Responsible Dischargers. The source analysis evaluated sediment loading at a subarea scale. The source analysis did not attempt to distinguish sediment loading at the scale of specific land ownerships nor did it distinguish between land areas subject to NPDES

220 Ten Mile River Sediment TMDL, p. 5.

221 United States Protection Agency Region IX, Trinity River Total Maximum Daily Load for Sediment (December 20, 2001) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/trinity_river/pdf/finaltrinitytmdl.pdf> [as of September 7, 2018] (Trinity River Sediment TMDL)

222 North Coast Sediment TMDL Implementation Policy.

regulation and land areas not subject to NPDES regulation. Therefore, this TMDL includes separate but identical load allocations for nonpoint sources and waste load allocations for each subarea.[223]

Table 40 – TMDL and Allocations by Source Category for Upper Area (tons/mi^2/year)

Source Categories	Reference Subwatersheds[1]	Westside Tributaries[2]	Upper Trinity[3]	East Fork Tributaries[4]	Eastside Tributaries[5]
Total Management	281	105	690	65	60
Percent Reduction	25 percent	33 percent	46 percent	83 percent	37 percent

[1] Stuarts Fork, Swift Creek, Coffee Creek
[2] Stuart Arm Area, Stoney Creek, Mule Creek, East Fork Stuart Fork, West Side Trinity Lake, Hatchet Creek, Buckeye Creek
[3] Upper Trinity River, Tangle Blue, Sunflower, Graves, Bear Upper Trinity Mainstem Area, Ramshorn Creek, Ripple Creek, Minnehaha Creek, Snowslide Gulch Area, Scorpion Creek
[4] East Fork Trinity, Cedar Creek, Squirrel Gulch Area
[5] East Side Tributaries, Trinity Lake

Table 41 – TMDL and Allocations by Source Category for Upper Middle Area (tons/mi^2/year)

Source Categories	Weaver and Rush Creeks	Deadwood Creek, Hoadley Gulch, and Poker Bar Area	Lewiston Lake Area	Grass Valley Creek[1]	Indian Creek	Reading and Browns Creek
Total Management	169	68	49	44	81	66
Percent Reduction	41 percent	88 percent	74 percent	97 percent	96 percent	82 percent

[1] The rate in Grass Valley Creek do not account for the amount of sediment trapped by Buckhorn Dam and Hamilton Ponds

223 Trinity River Sediment TMDL, p. 58.

Table 42 – TMDL and Allocations by Source Category for Lower Middle Area (tons/mi^2/year)

Source Categories	Reference Subwatersheds[1]	Canyon Creek[2]	Upper Tributaries[3]	Middle Tributaries[4]	Lower Tributaries[5]
Total Management (tons/mi^2/year)	24	326	67	53	55
Percent Reduction	0 percent	87 percent	50 percent	35 percent	39 percent

[1] New River, Big French, Manzanita, North Fork, East Fork, North Fork
[2] Canyon Creek
[3] Dutch, Soldier, Oregon Gulch, Conner Creek Area
[4] Big Bar Area, Prairie Creek, Little French Creek
[5] Swede, Italian, Canadian, Cedar Flat, Mill, McDonald, Hennessy, Quinby Creek Area, Hawkins, Sharber

Table 43 – TMDL and Allocations by Source Category for Lower Area (tons/mi^2/year)

Source Categories	Reference Subwatersheds[1]	Mill Creek and Tish Tang	Willow Creek	Campbell Creek and Supply Creek	Lower Mainstem Area and Coon Creek[2]
Total Management (tons/mi^2/year)	528	210	94	1961	63
Percent Reduction	11 percent	74 percent	91 percent	87 percent	44 percent

[1] Horse Linto Creek
[2] Since background rates for Lower Mainstem Area and Coon Creek were not available from GMA (2001), EPA used the same rate as was calculated for the Quinby Creek Area, which is immediately upstream, because Quinby Creek Area is comparable in size and underlain by the same geology type (Galice Formation).

The U.S. EPA expects the waste load allocations to be evaluated on a ten-year rolling average basis because of the natural variability in sediment delivery rates and does not expect the load allocation to be met for every square mile within a source category.[224] Responsible Dischargers are not to exceed the load allocations or reductions assigned to the "Total Management" source category, provided in tons/mi^2/yr. These allocations vary by subwatershed, as noted in Table 40 through Table 43 above. Responsible Dischargers calculate their

224 Trinity River Sediment TMDL, p. 63.

annual loading by multiplying the area of the site with the appropriate load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xvii. Van Duzen River Sediment TMDL[225]

The U.S. EPA established the Van Duzen River Sediment TMDL on December 16, 1999, to address the impairment of the Van Duzen River and its tributaries due to sediment. These TMDLs do not apply to lands under tribal jurisdiction.

The implementation requirements for the Van Duzen River Sediment TMDL in this General Permit are based on the North Coast Sediment TMDL Implementation Policy adopted on November 29, 2004. The North Coast Sediment TMDL Implementation Policy requires the use of existing permitting and enforcement tools to pursue compliance with sediment-related standards by all dischargers of sediment waste.[226] Construction stormwater dischargers covered under this General Permit are considered Responsible Dischargers for the Van Duzen River Sediment TMDL.

- Waste Load Allocation Translation

  This TMDL set the sediment waste load allocation for point sources at zero (0) because there are no point sources of sediment in the Van Duzen River watershed.[227]

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and the Sediment TMDL Requirements in Attachment H.

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225 United States Environmental Protection Agency Region IX, Van Duzen River and Yager Creek Total Maximum Daily Load for Sediment (December 16, 1999) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/vanduzen_river/pdf/vanduzen.pdf> [as of May 20, 2021] (Van Duzen River Sediment TMDL)

226 North Coast Sediment TMDL Implementation Policy.

227 Van Duzen River Sediment TMDL, p. 46.

The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocation. The North Coast Sediment TMDL Implementation Policy does not include an implementation date for this TMDL. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xviii. Lagunitas Creek Sediment TMDL[228]

The San Francisco Bay Regional Water Quality Control Board adopted the Lagunitas Creek Sediment TMDL on June 11, 2014, to address the impairment of Lagunitas Creek due to sediment. Point sources of sediment in the watershed contribute minimal sediment loading and are associated with municipal and construction stormwater runoff, which are regulated through NPDES permits. Construction sites that discharge into the Lagunitas Creek watershed are therefore considered Responsible Dischargers.

- Waste Load Allocation Translation

  The Lagunitas Creek Sediment TMDL set the sediment waste load allocation for construction stormwater runoff at 30 tons/year, which is equivalent to the current load from construction sites. Per the implementation measures of this TMDL, complying with the requirements of this General Permit is appropriate in addressing this waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocation.

  The final compliance deadline for the Lagunitas Creek Sediment TMDL is June 11, 2034. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by June 11, 2034.

228 San Francisco Bay Regional Water Quality Control Board, Lagunitas Creek Fine Sediment Reduction and Habitat Enhancement Plan (March 10, 2014), <https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/lagunitascrksediment/LagunitasSedimentHabitat%20StaffReportPublicReviewDraft.pdf> [as of April 28, 2022] (Lagunitas Creek Sediment TMDL)

xix. Napa River Sediment TMDL[229]

The San Francisco Bay Regional Water Quality Control Board adopted the Napa River Sediment TMDL on September 9, 2009, to address the impairment of Napa River due to sediment. Point sources of sediment that were identified as contributors of sediment to the watershed are associated with urban stormwater runoff, including construction stormwater runoff, and wastewater treatment plants, which are regulated by NPDES permits. Construction sites that discharge into the Napa River watershed are therefore considered Responsible Dischargers.

- Waste Load Allocation Translation

  The Napa River Sediment TMDL set the sediment waste load allocation for construction stormwater runoff at 500 tons/year, which is equivalent to the current load from construction sites. Per the implementation measures of this TMDL, complying with the requirements of this General Permit is appropriate in addressing this waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocation.

  The final compliance deadline for the Napa River Sediment TMDL is September 9, 2029. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by September 9, 2029.

xx. Pescadero and Butano Creek Sediment TMDL[230]

The San Francisco Bay Regional Water Quality Control Board adopted the Pescadero and Butano Creek Sediment TMDL on June 13, 2018, to

229 San Francisco Bay Regional Water Quality Control Board, Napa River Sediment Reduction and Habitat Enhancement Plan (September 15, 2009), <https://www.waterboards.ca.gov/rwqcb2/water_issues/programs/TMDLs/napariversedimenttmdl.html#:~:text=The%20Napa%20River%20Sediment%20TMDL,healthy%20fishery%20in%20this%20watershed.> [as of April 28, 2022] (Napa River Sediment TMDL)

230 San Francisco Bay Regional Water Quality Control Board, Pescadero-Butano Watershed Sediment TMDL and Habitat Enhancement Plan (December 11, 2018),

address the impairment of Pescadero and Butano Creek due to sediment. The only known point sources of sediment to the watershed are associated with stormwater runoff from state highways, municipalities, and construction sites; which are regulated by NPDES permits. Construction sites that discharge into the Pescadero-Butano Creek watershed are therefore considered Responsible Dischargers.

- Waste Load Allocation Translation

  The Pescadero and Butano Creek Sediment TMDL set the sediment waste load allocation for construction stormwater runoff at 150 tons/year, which is equivalent to the current load from construction sites. Per the implementation measures of this TMDL, complying with the requirements of this General Permit is appropriate in addressing this waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations.

  The final compliance deadline for the Pescadero and Butano Creek Sediment TMDL is June 13, 2038. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by June 13, 2038.

xxi. Sonoma Creek Sediment TMDL[231]

The San Francisco Bay Regional Water Quality Control Board adopted the Sonoma Creek Sediment TMDL on December 10, 2008, to address the impairment of Sonoma Creek due to sediment. The only known point sources of sediment to the watershed are associated with urban stormwater runoff from state highways, municipalities, industrial facilities, and construction sites; which are regulated by NPDES permits. Construction

<https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/pescadero/BPA%20FINAL.pdf> [as of May 20, 2021] (Pescadero and Butano Creek Sediment TMDL)

231 San Francisco Bay Regional Water Quality Control Board, Sonoma Creek Watershed Sediment TMDL and Habitat Enhancemnt Plan (December 12, 2008), <https://www.waterboards.ca.gov/rwqcb2/water_issues/programs/TMDLs/napariversedimenttmdl.html> [April 28, 2022] (Sonoma Creek Sediment TMDL)

sites that discharge into the Sonoma Creek watershed are therefore considered Responsible Dischargers.

- Waste Load Allocation Translation

  The Sonoma Creek Sediment TMDL set the sediment waste load allocation for construction stormwater runoff at 300 tons/year, which is equivalent to the current load from construction sites. Per the implementation measures of this TMDL, complying with the requirements of this General Permit is appropriate in addressing this waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocation.

  The final compliance deadline for the Sonoma Creek Sediment TMDL is December 10, 2028. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by December 10, 2028.

xxii. San Lorenzo River Sediment TMDL[232]

The Central Coast Regional Water Quality Control Board adopted the San Lorenzo River Sediment TMDL on May 16, 2003, to address the sediment related impairment of San Lorenzo River which is accelerated by anthropogenic watershed disturbances. The source analysis did not distinguish sediment loading between point and nonpoint sources, but rather assigned load allocations to water bodies within the San Lorenzo River watershed. Construction activities were included under the load allocation for Other Urban and Rural Lands sediment category. Therefore, construction sites covered under this General Permit are considered Responsible Dischargers.

232 Central Coast Regional Water Quality Control Board, San Lorenzo River Total Maximum Daily Load and Implementation Plan for Sediment Including Carbonera Creek, Lompico Creek, and Shingle Mill Creek (May 16, 2003), <https://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/docs/san_lorenzo/sediment/index.html> [as of May 20, 2021] (San Lorenzo River Sediment TMDL)

- Waste Load Allocation Translation

  The San Lorenzo River Sediment TMDL did not establish a waste load allocation for construction sites, as it is included in the load allocation for the Other Urban and Rural Lands sediment category as indicated in Table 44 below.

Table 44 – Other Urban and Rural Land Load Allocations for San Lorenzo River Sediment TMDL

Water Body	Allocation (tons/yr)
Carbonara Creek	2,622
Lompico Creek	965
Shingle Mill Creek	310
San Lorenzo River	43,368

Per the San Lorenzo River Sediment TMDL implementation plan, complying with the requirements of this General Permit is appropriate to meet the load allocations.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about excessive sediment loading. The final compliance deadline for the San Lorenzo River Sediment TMDL is May 16, 2028. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by May 16, 2028.

xxiii. Squaw Creek Sediment TMDL[233]

The Lahontan Regional Water Quality Control Board adopted the Squaw Creek Sediment TMDL in April 2006 to address the impairment of Squaw Creek due to sediment. Accelerated hillslope erosion from land disturbances related to development in natural erosion-prone areas contribute to excess sediment delivery to the creek. Therefore, construction sites covered under this General Permit are considered Responsible Dischargers.

233 Lahontan Regional Water Quality Control Board, Total Maximum Daily Load for Sediment, Squaw Creek, Placer County (April 2006), <https://www.waterboards.ca.gov/lahontan/water_issues/programs/tmdl/squaw_creek/docs/basin_plan_amendment_final.pdf> [as of May 20, 2021] (Squaw Creek Sediment TMDL)

- Waste Load Allocation Translation

  There are currently no NPDES-regulated point sources in the watershed; therefore, the waste load allocation is zero (0).[234] Additionally, the load allocations are not viewed as appropriate for discharge specifications in permits as they are broad estimates. Based on the assumptions for assigning the requirements of this TMDL, complying with the requirements of this General Permit is appropriate in addressing this waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about excessive sediment loading.

  The final compliance deadline for the Squaw Creek Sediment TMDL was estimated to be 20 years, or April 2026. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by April 2026.

xxiv. Truckee River Sediment TMDL[235]

The Lahontan Regional Water Quality Control Board adopted the Truckee River Sediment TMDL in May 2008 to address the impairment of the Middle Truckee River Watershed due to sediment discharges during high-flow events such as those caused by thunderstorms. Primary sources of sediment include runoff from urban areas, dirt roads, legacy erosion sites, and graded ski runs. Although not explicitly stated, construction sites within urban areas or that utilize dirt roads, covered under this General Permit, can contribute to sediment loading in the Truckee River watershed and are therefore considered Responsible Dischargers.

- Waste Load Allocation Translation

  This TMDL set a total waste load allocation for all sediment point sources at 4,936 tons/yr. The source analysis did not attempt to distinguish sediment loading at the scale of specific land ownerships.

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234 Squaw Creek Sediment TMDL, p. 2.

235 Lahontan Regional Water Quality Control Board, Total Maximum Daily Load for Sediment Middle Truckee River Watershed (May 2008), <https://www.waterboards.ca.gov/lahontan/water_issues/programs/tmdl/truckee/docs/adopted_basinplan_amendment.pdf> [as of May 20, 2021] (Truckee River Sediment TMDL)

NPDES-regulated point sources are expected to achieve compliance through the requirements of their respective NPDES permits. Per the implementation plan of the Truckee River Sediment TMDL, compliance with this General Permit is appropriate in addressing this waste load allocation.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about excessive sediment loading.

  The final compliance deadline for the Truckee River Sediment TMDL was estimated to be 20 years, or May 2028. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance by May 2028.

xxv. San Diego Creek and Newport Bay Sediment TMDL[236]

The Santa Ana Regional Water Quality Control Board adopted the San Diego Creek and Newport Bay Sediment TMDL on April 16, 1999, to address the erosion in the San Diego Creek watershed and resultant siltation in Newport Bay. Anthropogenic activities such as extensive grading for development and increased runoff due to urbanization contribute to sediment loading in this watershed. Construction sites covered under this General Permit are considered Responsible Dischargers for this TMDL.

- Load Allocation Translation

  The San Diego Creek and Newport Bay Sediment TMDL assigns a load allocation of 13,000 tons/yr to construction sites that discharge to Newport Bay and 13,000 tons/yr to construction sites that discharge into the San Diego Creek watershed. The load allocations are shared amongst all construction sites within the Newport Bay/San Diego Creek watershed and are implemented as a 10-year running annual average. The primary implementation measure for this TMDL is complying with the requirements of this General Permit which is expected to be appropriate to address this load allocation.

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236 Santa Ana Regional Water Quality Control Board, Basin Plan Amendment Total Maximum Daily Load for Sediment in the Newport Bay/San Diego Creek Watershed (April 16, 1999) <https://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/docs/tmdl02.pdf> [as of May 20, 2021] (San Diego Creek and Newport Bay Sediment TMDL)

Responsible Dischargers shall comply with the requirements of this General Permit upon its effective date. The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about excessive sediment loading.

The San Diego Creek and Newport Bay Sediment TMDL does not include a deadline to achieve compliance. Therefore, Responsible Dischargers are required to comply with this TMDL upon the effective date of this General Permit.

xxvi. Los Peñasquitos Lagoon Sediment TMDL[237]

The San Diego Regional Water Quality Control Board adopted the Los Peñasquitos Lagoon Sediment TMDL on June 13, 2012, to address the impairment of Los Peñasquitos Lagoon due to sediment.

The watershed sources of sediment consist of point and non-point source discharges in the watershed draining into Los Peñasquitos Lagoon. Anthropogenic activities such as land development exacerbate erosive processes by exposing sediment and creating more impervious surfaces which increases the velocity and volume of runoff. The Los Peñasquitos Lagoon Sediment TMDL identifies construction stormwater discharges as contributing sediment to the Lagoon and are therefore considered Responsible Dischargers.[238] According to the Los Peñasquitos Lagoon Sediment TMDL staff report, the potential contribution of pollutant loadings from construction stormwater is low because non-stormwater discharges are prohibited or authorized under strict permit circumstances.[239]

- Waste Load Allocation Translation

  The Los Peñasquitos Lagoon Sediment TMDL assigns a final waste load allocation of 2,580 tons/year to the combined responsible parties for discharges into the Los Peñasquitos Lagoon Watershed.[240] Responsible

237 San Diego Regional Water Quality Control Board, Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate the Sediment Total Maximum Daily Load (TMDL) for Los Peñasquitos Lagoon (June 13, 2012) <https://www.waterboards.ca.gov/sandiego/board_decisions/adopted_orders/2012/R9-2012-0033_Attach_A.pdf> [as of May 20, 2021] (Los Peñasquitos Lagoon Sediment TMDL)

238 Los Peñasquitos Lagoon Sediment TMDL, p. A-5.

239 San Diego Regional Water Quality Control Board, Sediment TMDL for Los Peñasquitos Lagoon Staff Report (June 13, 2012), <https://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/docs/los_penasquitos_lagoon/updates071212/Staff_Report.pdf> [as of May 20, 2021]

240 Los Peñasquitos Lagoon Sediment TMDL, p. A-6.

parties include: Phase I Municipal Separate Storm Sewer Systems (MS4s) co-permittees (the County of San Diego, City of San Diego, City of Del Mar, and City of Poway), Phase II MS4 permittees, the California Department of Transportation, and general construction and industrial stormwater NPDES permittees. The Phase I MS4 co-permittees and the California Department of Transportation are responsible for assuming the lead role in coordinating and carrying out the necessary actions, compliance monitoring requirements, and successful implementation of the adaptive management framework required as part of this TMDL. Responsible Dischargers are expected to cooperate with all responsible parties to reduce their collective sediment load.

Responsible Dischargers are required to monitor sediment discharges from their sites to demonstrate progress towards compliance with final waste load allocations.[241] Monitoring flow rates for construction stormwater discharges is not required for all dischargers in this General Permit and is specific to Responsible Dischargers located in the Los Peñasquitos Lagoon Watershed to assess the correlation between flow and sediment deposition in this water body.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit and are required to provide an estimate of a representative flow rate from their construction site for at least one precipitation event that generates discharge within the reporting year. Monitoring flow rate values should be consistent with the monitoring, calculation, and reporting methods and framework used by the Phase I MS4 co-permittees. Responsible Dischargers shall submit the representative flow estimate as a PDF attachment to the Annual Report required in this General Permit.[242] The Regional Water Board may assign additional monitoring, reporting, and BMP requirements upon obtaining site specific information about exceedances of the waste load allocations.

  Compliance actions will be required upon the effective date of this General Permit. The final compliance deadline for the Los Peñasquitos Lagoon TMDL is July 14, 2034. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or

241 Los Peñasquitos Lagoon Sediment TMDL, p. A-8.

242 Unless another alternative electronic method in SMARTS is provided by the Water Boards.

interim targets to progress towards the required final compliance by July 14, 2034.

f. Temperature TMDLs

Seven Temperature TMDLs, established by the U.S. EPA, are applicable to construction stormwater dischargers. These include the Temperature TMDLs for the Mattole River,[243] Navarro River,[244] Scott River[245] and the Lower Main,[246] Middle Main,[247] North Fork,[248] and Upper Main[249] extents of the Eel River.

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243 United States Environmental Protection Agency Region IX, Mattole River TMDL for Sediment and Temperature (December 30, 2002), <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/mattole_river/110707/mattole.pdf> [as of May 20,2021] (Mattole River Temperature TMDL)

244 United States Environmental Protection Agency Region IX, Navarro River TMDL for Sediment and Temperature (November 2004), <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/navarro_river/110708/navarro.pdf> [as of May 20, 2021] (Navarro River Temperature TMDL)

245 North Coast Regional Water Quality Control Board, Scott River TMDL (June 2018), Ch. 4, p. 65, <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/scott_river> [as of April 28,2022] (Scott River Temperature TMDL)

246 United States Environmental Protection Agency Region IX, Lower Eel River Total Maximum Daily Loads for Temperature and Sediment (December 18, 2007) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_lower/pdf/LER-TMDL-final-121807-signed.pdf> [as of April 28, 2022] (Eel River – Lower Main Temperature TMDL)

247 United States Environmental Protection Agency Region IX, Final Middle Main Eel River and Tributaries (from Dos Rios to the South Fork) Total Maximum Daily Loads for Temperature and Sediment (December 31, 2005) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_middle_main/pdf/mainmdl-eel-final.pdf> [April 28, 2022] (Eel River – Middle Main Temperature TMDL)

248 United States Environmental Protection Agency Region IX, North Fork Eel River Total Maximum Daily Loads for Sediment and Temperature (December 30, 2002) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_north_fork/pdf/final.pdf> [as of April 28, 2022] (Eel River – North Fork Temperature TMDL)

249 United States Environmental Protection Agency Region IX, Final Upper Main Eel River and Tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury) Total Maximum Daily Loads for Temperature and Sediment (December 29, 2004) <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/eel_river_uper_main/pdf/uer-tmdl-final-12-28.pdf> [as of April 28, 2022] (Eel River – Upper Main Temperature TMDL)

Stream temperature is a critical physical characteristic of aquatic habitats that directly impacts salmonid species. Metabolism, food requirements, growth rates, timing of adult migration upstream, timing of juvenile migration downstream, and sensitivity to diseases are all affected by stream temperature. Although stream temperatures in Northern California naturally provide a wide range of summer conditions for rearing salmonids, the removal of riparian vegetation from road building and urbanization are amongst the sources observed to increase stream temperatures. Excessive sediment input also raises stream temperature by widening stream channels, filling pools, and eliminating riparian vegetation during flood events.[250]

The requirements set forth in these TMDLs apply to all point sources within the watersheds of these water bodies, which was assumed to include construction stormwater discharges. Therefore, dischargers covered under this General Permit are considered Responsible Dischargers for the Temperature TMDLs.

The Temperature TMDLs for the Klamath River, Shasta River, and the Middle Fork of the Eel River were not translated for this General Permit. These TMDLs had no known point sources that increase stream temperature and therefore did not assign any waste load allocations.

- Waste Load Allocation Translation

  The Temperature TMDLs define the waste load allocations in two different ways:

  1. The TMDL for the Lower Main Eel River assigns a waste load allocation of “zero (0) net increase in receiving water temperature” to construction sites subject to this General Permit.
  2. The TMDLs for the Mattole River, Navarro River, Scott River and the Middle Main, North Fork, and Upper Main extents of the Eel River set the waste load allocation at zero (0), as no point sources are considered to contribute to the total loading of the respective water bodies.

  The two waste load allocation definitions will be translated similarly and require that the Responsible Dischargers do not produce discharges that result in elevated stream temperatures.

  The implementation requirements for the Temperature TMDLs in this General Permit are based on the Temperature Implementation Policy adopted by the North Coast Regional Water Quality Control Board on March 13, 2014. The North Coast Temperature Implementation Policy requires the use of existing permitting and enforcement tools such as NPDES permits to pursue compliance with the water quality objectives for temperature.

250 Eel River – Upper Main Temperature TMDL, p. 7.

Additionally, the Temperature Implementation Policy[251] relies on the Sediment TMDL Implementation Policy[252] as a means of addressing elevated water temperatures associated with excess sediment discharges.[253] The effective implementation of erosion and sediment controls, as well as meeting post-construction standards, required by this General Permit are expected to achieve the waste load allocation. Therefore, complying with the requirements of this General Permit is consistent with the assumptions and requirements of the Temperature and Sediment TMDL Implementation Policies.

- Compliance Actions and Schedule

  Compliance with this General Permit's requirements is consistent with the assumptions and requirements of the Temperature Implementation Policy and is sufficient to achieve the assigned waste load allocation. Responsible Dischargers that implement BMPs specific to preventing or controlling stormwater exposure with sediment and comply with post-construction standards are expected to meet the assigned waste load allocation. If a BMP is observed failing, the Responsible Discharger shall evaluate the BMPs being used and implement a strategy in the site's SWPPP to prevent potential exceedances of the waste load allocation in the future. The Regional Water Quality Control Boards may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information about exceedances of the waste load allocation.

  The North Coast Temperature Implementation Policy does not include an implementation deadline for Temperature TMDLs. Therefore, Responsible Dischargers are required to comply with the Temperature TMDLs upon the effective date of this General Permit, as listed in Table H-2 of Attachment H.

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251 North Coast Regional Water Quality Control Board, Policy for the Implementation of the Water Quality Objectives for Temperature (March 13, 2014), <https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/temperature_amendment/> [as of May 20, 2021], (North Coast Temperature Implementation Policy)

252 North Coast Regional Water Quality Control Board, Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters in the North Coast Region (November 29, 2004), <https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/sediment_tmdl_implementation/> [as of May 20, 2021] (North Coast Sediment TMDL Implementation Policy)

253 North Coast Temperature Implementation Policy, p.4.200.

g. Metals and Toxics TMDLs

Seventeen (17) Metals and/or Toxics TMDLs are translated for this General Permit. Metals can be toxic to aquatic life and cause impairments of beneficial uses within water bodies. Many of the artificial surfaces of the urban environment (e.g., galvanized metal, paint, automobiles, or preserved wood) contain metals, which enter stormwater as the surfaces corrode, flake, dissolve, decay, or leach.[254]

Other toxic pollutants in stormwater include organochlorine (OC) pesticides (chlordane, DDD, DDE, DDT, dieldrin, and toxaphene), polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs), which can contribute to the impairment of beneficial uses within water bodies. The use of these pollutants has been banned for many years because of potential human health and environmental harm, however, the physio-chemical properties of the pollutants allow them to persist in the environment, bioaccumulate through the food web, and pose risks to aquatic life, wildlife, and human health.

The primary transport mechanism for the metals and toxics is the mobilization of fine sediment via stormwater and authorized NSWDs. OC pesticides, PAHs, PCBs, and metals have an affinity for organic matter and will partition from water and sorb to organic substances such as sediment. Sediment and particulates transported through construction stormwater discharges eventually settle in the bed of the receiving water.

Some of the TMDLs addressed in this Section have receiving water sediment numeric targets translated to dry-weight sediment concentration waste load allocations to be met by Responsible Dischargers at the site's discharge location(s). The sediment targets address receiving waterbed-toxicity. Because these TMDLs associate receiving waterbed-toxicity targets to discharges of metals, OC pesticides, PAHs, and PCBs bound to sediment particulates, these TMDLs are addressed by implementing sediment control measures so that sediment-bound particulates do not leave a construction site's area and settle in the receiving waterbed via stormwater discharges and authorized NSWDs.

This General Permit currently requires implementation of site-specific erosion and sediment controls to minimize sediment in construction runoff. The site-specific erosion control requirements address erosion in downstream channels and banks, upgradient run-on flow diversion conveyances, and cut and fill slopes.

254 CASQA, California Stormwater Best Management Practice Handbook: Construction (July 2015). <https://www.casqa.org/resources/bmp-handbooks/construction>. [as of May 20, 2021]. (CASQA Construction BMP Handbook).

In addition, Responsible Dischargers with the potential to discharge into a TMDL watershed, water body, or reach are required to install erosion controls that will result in predicted erosion rates that are as protective as pre-construction conditions (e.g., undisturbed vegetation for the area) for each phase of the construction project. The Responsible Discharger shall use RUSLE2 to calculate the predicted erosion rates, as described in Attachment H.

Sediment produced by erosion occurring in channels is not estimated by RUSLE2[255]. This General Permit controls channel erosion by requiring engineered conveyance of up gradient run-on water, channel and streambank erosion control, and peak flowrate and volume controls.

Other TMDLs addressed in this Section assign waste load allocations to Responsible Dischargers in one of the following ways:

- A fixed concentration-based waste load allocation as a solution of effluent, where a concentration-based waste load allocation is assigned directly to Responsible Dischargers at the point of discharge;
- A fixed concentration-based waste load allocation as dry-weight sediment, where a concentration-based waste load allocation is assigned directly to Responsible Dischargers at the point of discharge;
- A hardness-based floating concentration waste load allocation, where the waste load allocation is hardness dependent on receiving water; or
- A waste load allocation that assigned both a mass-based waste load allocation and a concentration-based waste load allocation

Concentration-based waste load allocations, where applicable, were translated into numeric action levels or numeric effluent limitations for Responsible Dischargers to comply with.

i. Ballona Creek Metals TMDL[256]

The Los Angeles Water Quality Control Board (Los Angeles Regional Water Quality Control Board) adopted the Ballona Creek Metals TMDL on

255 USDA-Agricultural Research Service, DRAFT User's Reference Guide Revised Universal Soil Loss Equation Version 2 (May 2008), p. 22-23 <http://fargo.nserl.purdue.edu/rusle2_dataweb/userguide/RUSLE2_User_Ref_Guide_2008.pdf> [as of May 20, 2021]

256 Los Angeles Regional Water Quality Control Board, Proposed Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Ballona Creek Metals TMDL <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/Ballona20Metals/R13-010M_RB_BPA.pdf> [as of April 28, 2022] (Ballona Creek Metals TMDL)

September 6, 2007, to address the impairment of Ballona Creek and Sepulveda Canyon Channel due to copper, lead, and zinc.

- Source Analysis

  Storm drains convey a large percentage of metals loadings during dry weather. During wet weather, most of the metals loadings in Ballona Creek are in particulate form and are associated with wet-weather storm flows.[257]

- Waste Load Allocation Translation

  1) Dry-Weather Waste Load Allocation

     The Ballona Creek Metals TMDL assigns a dry-weather waste load allocation of zero (0) for Responsible Dischargers. Non-Stormwater Discharges (NSWDs) are authorized in this General Permit if Order, Section IV.A terms and conditions are met to control the discharge of pollutants from the construction site. Order, Section IV.B prohibits all NSWDs not authorized under Order, Section IV.A; therefore, all unauthorized NSWDs must be either eliminated or have regulatory coverage under a separate NPDES permit. Authorized NSWDs, as defined in this General Permit, are authorized because these discharges do not comingle with stormwater associated with construction activity. The Regional Water Board may impose additional requirements on NSWDs if deemed necessary per site-specific analysis.

  2) Wet-Weather Waste Load Allocations

     The Ballona Creek Metals TMDL assigns mass-based waste load allocations per construction area in grams per day per acre (g/day/acre) for copper, lead, and zinc. The waste load allocations for metals are shown in Table 45 below.

Table 45 – Ballona Creek and Sepulveda Channel Waste Load Allocations

Pollutant	Waste Load Allocation (g/day/acre)
Copper	1.673×10^{-10} x Daily storm volume (L)
Lead	9.369×10^{-10} x Daily storm volume (L)
Zinc	1.279×10^{-9} x Daily storm volume (L)

Directly implementing the copper, lead, and zinc waste load allocations will result in a unique mass load for each Responsible Discharger dependent on the area of the construction site. Requiring

257 Ballona Creek Metals TMDL, p. 3.

Responsible Dischargers to calculate the construction site's specific mass loading of a pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most metal loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of the copper, lead, and zinc, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the identified metals. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2.

  The TMDL's final compliance deadline was January 11, 2015. Since this compliance deadline has passed, the Responsible Dischargers shall comply with the requirements of this General Permit and the RUSLE2 modeling requirements in Attachment H, Section I.G.2, upon the effective date of this General Permit.

ii. Ballona Creek Estuary Toxics TMDL[258]

The Los Angeles Regional Board adopted the Ballona Creek Estuary Toxics TMDL on July 7, 2005, to address the impairment of Ballona Creek and Ballona Creek Estuary (Ballona Watershed) due to cadmium, chlordane, copper, DDT, lead, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs), silver, toxicity in sediment, and zinc. Chlordane and DDT are organochlorine (OC) pesticides. The Ballona Creek Estuary Toxics

258 Los Angeles Regional Water Quality Control Board, Proposed Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Ballona Creek Estuary Toxic Pollutants TMDL <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/Ballona%20Toxics/R13-010T_RB_BPA.pdf> [as of May 20, 2021] (Ballona Creek Estuary Toxics TMDL)

does not include a TMDL for PAHs because recent data does not show PAH levels exceeding the numeric targets.[259]

- Source Analysis

  The Ballona Creek Estuary Toxics TMDL identifies urban stormwater as a substantial source of metals and the most prevalent metals in urban stormwater are consistently associated with particulates. As a result, metals have the potential to accumulate in estuarine sediments where they may pose a toxicity risk. A majority of organic constituents in stormwater such as PAHs, phthalates, and OC compounds are also associated with particulates.[260]

- Waste Load Allocation Translation

  The Ballona Creek Estuary Toxics TMDL assigns grouped mass-based waste load allocations per construction area in grams per year per acre (g/yr/ac) for cadmium, chlordane, copper, DDT, lead, PAHs, PCBs, silver, toxicity in sediment, and zinc. The waste load allocations for are shown in Table 46 below.

Table 46 – Ballona Creek Estuary Waste Load Allocations

Pollutant	Waste Load Allocation (g/yr/ac)
Cadmium	0.1
Copper	3
Lead	4
Silver	0.1
Zinc	13
Chlordane	0.00011
DDTs	0.00016
Total PCBs	0.00028

Directly implementing the waste load allocations will result in a unique mass load for each Responsible Discharger dependent on the area of construction site. Requiring Responsible Dischargers to calculate the construction site's specific mass loading of a pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most metal and toxic pollutant loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

259 Ballona Creek Estuary Toxics TMDL, p. 2.

260 Ballona Creek Estuary Toxics TMDL, p. 3.

1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of the metals and toxic pollutants, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the identified metals and toxic pollutants. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2.

  The TMDL's final compliance deadline was January 11, 2015. Since this compliance deadline has passed, the Responsible Dischargers shall comply with the requirements of this General Permit and the RUSLE2 modeling requirements in Attachment H, Section I.G.2, upon the effective date of this General Permit.

iii. Calleguas Creek Metals and Selenium TMDL[261]

The Los Angeles Water Quality Control Board (Los Angeles Water Board) adopted the Calleguas Creek Metals and Selenium TMDL on October 13, 2016, to address the impairment of Calleguas Creek, Mugu Lagoon, and Revolon Slough due to copper, mercury, nickel, and selenium.

- Source Analysis

  The significant sources of metals and selenium in the watershed include urban runoff, agricultural runoff, POTW effluent, and groundwater. Open space was also a significant source for mercury. Higher loads were delivered during wet weather for all constituents due to the association between metals and particulate matter. The source analysis indicates that naturally occurring metals and selenium may be contributing sources in soil. The Calleguas Creek Metals and Selenium

261 Los Angeles Regional Water Quality Control Board, Total Maximum Daily Load for Metals and Selenium in the Calleguas Creek, its Tributaries and Mugu Lagoon <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R16-007_RB_BPA.pdf> [as of May 20, 2021] Calleguas Creek Metals and Selenium TMDL)

TMDL includes plans for special studies to further assess natural sources of metals in soil.[262]

- Waste Load Allocation Translation

  1) Dry-weather Waste Load Allocations

     The Calleguas Creek Metals and Selenium TMDL assigns concentration-based waste load allocations for dry-weather. Non-Stormwater Discharges (NSWDs) are authorized in this General Permit if Order, Section IV.A terms and conditions are met to control the discharge of pollutants from the construction site. Order, Section IV.B prohibits all NSWDs not authorized under Order, Section IV.A; therefore, all unauthorized NSWDs must be either eliminated or have regulatory coverage under a separate NPDES permit. Authorized NSWDs, as defined in this General Permit, are authorized because these discharges do not commingle with stormwater associated with construction activity. The Regional Water Board may impose additional requirements on NSWDs if deemed necessary per site-specific analysis.

  2) Wet-weather Interim Waste Load Allocations for Copper

     The Calleguas Creek Metals and Selenium TMDL assigns an interim concentration-based wet-weather waste load allocation for copper to “Permitted Stormwater Dischargers (PSDs)” to be met at the receiving water. Responsible Dischargers are identified as a PSDs as defined in the Calleguas Creek Metals and Selenium TMDL.[263] The interim wet daily maximum concentration-based waste load allocation will be translated into a numeric action level for Responsible Dischargers until the final waste load allocations apply. The interim waste load allocations were translated into numeric action levels as shown in Table 47 below. The numeric action levels are in mg/L to be consistent with the reporting units in SMARTS.

Table 47 – Calleguas Creek, Conejo Creek, and Revolon Slough Interim Wet-Weather Waste Load Allocations

Water body	Waste Load Allocation for Copper (ug/L)	Total Copper Numeric Action Level (mg/L)
Calleguas and Conejo Creek	204	0.204
Revolon Slough	204	0.204

262 Calleguas Creek Metals and Selenium TMDL, p. 4, p. 13.

263 Calleguas Creek Metals and Selenium TMDL, p. 19.

3) Wet-weather Final Waste Load Allocations Copper, Nickel, and Selenium

The Calleguas Creek Metals and Selenium TMDL assigns a final mass-based wet-weather waste load allocations for copper, nickel, and selenium in pounds per day to "Permitted Stormwater Dischargers (PSDs)" to be met in the water column of Calleguas Creek or Revolon Slough. The waste load allocation for copper, nickel, and selenium are shown in Table 48 below.

Table 48 – Calleguas Creek, Conejo Creek, and Revolon Slough Interim Wet-Weather Waste Load Allocations

Pollutant	Waste Load Allocation for Calleguas Creek and Conejo Creek (lbs/d)	Waste Load Allocation for Revolon Slough (lbs/d)
Copper*	(0.00054*Q^2*0.032*Q – 0.17)*WER – 0.06	(0.0002*Q2+0.0005*Q)*WER
Nickel**	0.014*Q^2+0.82*Q	0.027*Q^2+0.47*Q
Selenium**	(a)	0.027*Q^2+0.47*Q

*The approved site-specific WER of 1.51 for Mugu Lagoon is used to calculate the assigned waste load allocations for discharges to Calleguas and Conejo Creek to ensure the downstream standard is achieved. Permitted stormwater dischargers may apply a WER of up to 3.69 for discharges to upstream reaches, with the exception of Reaches 4 and 5, to calculate the assigned waste load allocations. If a WER of greater than 1.51 is applied, permitted stormwater dischargers shall be required to provide detailed quantitative analysis to demonstrate that the waste load allocations as modified by the WER are protective of downstream reaches. No site specific WER for Revolon Slough was approved so default WER value of 1 is applied. Regardless of the final WERs, total copper loading shall not exceed current loading.
**Current loads do not exceed loading capacity during wet weather. Sum of all loads cannot exceed loads presented in the table. Q: Daily storm volume (cfs). (a) Selenium allocations have not been developed for this reach as it is not on the 303(d) list.

Directly implementing the final copper, nickel, and selenium waste load allocations will result in a unique mass load for each Responsible Discharger dependent on the daily stormwater flows and area of construction site. Requiring Responsible Dischargers to calculate the construction site's specific mass loading of a pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most metal loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

4) Wet-weather Interim Limits and Final Waste Load Allocations for Mercury

The Calleguas Creek Metals and Selenium TMDL assigns mass-based interim and final waste load allocations for mercury pounds per year (lbs/yr) to "Permitted Stormwater Dischargers (PSDs)" to be met at the receiving water. The waste load allocations for mercury are shown in Table 49 below.

Table 49 – Interim Limits and Final Waste Load Allocations for Mercury in Suspended Sediment for Calleguas Creek and Revolon Slough

Flow Range	Calleguas Creek Interim (lb/yr)	Calleguas Creek Final (lb/yr)	Revolon Slough Interim (lb/yr)	Revolon Slough Final (lb/yr)
0-15,000 Million Gallons per Year	3.3	0.4	1.7	0.1
15,000-25,000 Million Gallons per Year	10.5	1.6	4	0.7
Above 25,000 Million Gallons per Year	64.6	9.3	10.2	1.8

Directly implementing the copper and nickel waste load allocations will result in a unique mass load for each Responsible Discharger dependent on the range of stormwater flows and area of construction site. Requiring Responsible Dischargers to calculate the construction site's specific mass loading of a pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most metal loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  The TMDL's interim compliance deadline was March 27, 2007. Since this compliance deadline has passed, the interim waste load allocations shall be met by the effective date of this General Permit. Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers shall compare all non-visible sampling and analytical results to the numeric action level for copper. If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the waste load allocations in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to copper, nickel, selenium, and mercury sources are expected to meet the assigned waste load allocations.

  The TMDL's final compliance deadline was March 27, 2022. Since this compliance deadline has passed, the Responsible Dischargers shall comply with the erosion and sediment control requirements of this General Permit and RUSLE2 modeling requirements in Attachment H, Section I.G.2, upon the effective date of this General Permit.

iv. Calleguas Creek OC Pesticide and PCBs TMDL[264]

The Los Angeles Regional Water Quality Control Board adopted the Calleguas Creek OC Pesticide and PCBs TMDL on June 9, 2006, to address the impairment of Calleguas Creek Watershed due to organochlorine (OC) pesticides and polychlorinated biphenyls (PCBs). Eleven of fourteen reaches in the watershed are identified as impaired for these toxic pollutants on the 2002 303(d) list.

264 Los Angeles Regional Water Quality Control Board, Total Maximum Daily Loads (TMDLs) for Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon (July 7, 2005), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/2005-010_RB_BPA.pdf> [as of May 20, 2021] (Calleguas Creek OC Pesticides and PCBs TMDL)

- Source Analysis

  The largest sources of OC pesticides and PCBs in the watershed were estimated to be agricultural runoff and residues from past uses, respectively. Urban runoff is considered a minor source of OC pesticides and PCBs. Both impairing contaminants are known to bind to sediments and fine particles, which are transported to the watershed through runoff and erosion.

- Waste Load Allocation Translation

  The Calleguas Creek OC Pesticide and PCBs TMDL assigns interim and final waste load allocations for pollutants in sediment for stormwater permittees, shown in Table 50 and Table 51 below. Although not specifically identified in the TMDL, waste load allocations were interpreted as applicable to construction stormwater dischargers due to the sediment and erosion intensive activities associated with construction. Therefore, construction stormwater dischargers are considered Responsible Dischargers for the Calleguas Creek OC Pesticide and PCBs TMDL.

Table 50 – Interim Sediment Waste Load Allocations (ng/g) for Stormwater Permittees

Constituent	Mugu Lagoon*	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4-DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

* Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2

Table 51 – Final Sediment Waste Load Allocations (ng/g) for Stormwater Permittees

Constituent	Mugu Lagoon*	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4-DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

* Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2

Compliance with the sediment-based waste load allocations is measured as an in-stream annual average at the base of each subwatershed where the dischargers are located. Requiring Responsible Dischargers to sample for the pollutant(s) within the receiving waters would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, OC pesticide and PCB loading are associated with sediment and fine particles transported by runoff. Therefore, the following will address this TMDL:

1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of organochlorine compounds associated with the impaired water body, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the organochlorine compounds. Furthermore, Responsible Dischargers are to comply with the RUSLE 2 modeling requirements in Attachment H, Section I.G.2.

  The Calleguas Creek OC Pesticide and PCBs TMDL's interim compliance deadline for the TMDLs was March 26, 2007. Since the deadline has already passed, Responsible Dischargers shall comply with

the interim waste load allocations through the requirements of this General Permit and the RUSLE2 modeling requirements in Attachment H, Section I.G.2, upon the effective date of this General Permit. Compliance with the final waste load allocations shall be achieved by March 26, 2027.

v. Colorado Lagoon Toxics TMDL[265]

The Los Angeles Regional Water Quality Control Board adopted the Colorado Lagoon Toxics TMDL on October 1, 2009, to address the impairment of Colorado Lagoon due to metals, organochlorine (OC) pesticides (chlordane, DDT, and dieldrin), polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and sediment toxicity.

- Source and Linkage Analysis

  The Colorado Lagoon watershed is divided into five sub-basins that discharge stormwater and urban dry weather runoff to Colorado Lagoon.[266] The impairing contaminants in sediment are associated with fine-grained particles that are primarily delivered to the sediments through suspended solids in stormwater and urban runoff.[267] Therefore, construction sites covered under this General Permit are considered Responsible Dischargers for the Colorado Lagoon Toxics TMDL.

- Waste Load Allocation Translation

  The Colorado Lagoon Toxics TMDL assigns concentration-based waste load allocations for lead, zinc, OC pesticides, PAHs, and PCBs to be met at the construction site's discharge point(s) for discharges into Colorado Lagoon.[268] The waste load allocations are shown in Table 52 below.

265 Los Angeles Regional Water Quality Control Board, Total Maximum Daily Load for Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs), Sediment Toxicity, Polycyclic Aromatic Hydrocarbons (PAHs), and Metals for Colorado Lagoon (October 1, 2009), <https://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/coloradolagoontoxicity/signedresolutionr09_005_amendments.pdf> [as of April 29, 2022] (Colorado Lagoon Toxics TMDL)

266 Colorado Lagoon Toxics TMDL, p. 3.

267 Colorado Lagoon Toxics TMDL, p. 4.

268 Colorado Lagoon Toxics TMDL, p. 5, 10.

Table 52 – Colorado Lagoon Waste Load Allocations

Pollutants	Waste Load Allocation Suspended Sediment-Associated Contaminants (ug/dry kg)
Chlordane	0.50
Dieldrin	0.02
Lead	46,700.00
Zinc	150,000.00
PAHs	4,022.00
PCBs	22.70
DDT	1.58

Requiring Responsible Dischargers to sample for the pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most metal loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.
2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of the toxic pollutants associated with the impaired water body, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the organochlorine compounds. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2.

  The final compliance deadline for the Colorado Lagoon Toxics TMDL was July 28, 2018. Since the deadline has already passed, Responsible Dischargers shall comply with the waste load allocations through the requirements of this General Permit and the RUSLE2 modeling requirements in Attachment H, Section I.G.2, upon the effective date of this General Permit.

vi. Los Angeles Area Lakes Waters Toxics TMDL[269]

The U.S. EPA adopted the Los Angeles Area Lakes Toxics TMDL on March 26, 2012, to address the impairment in three of the nine assessed lakes in the Los Angeles Region due to organochlorine (OC) pesticides (chlordane, dieldrin, DDT) and polychlorinated biphenyls (PCBs). The three identified lakes for OC pesticides and PCBs impairments are Peck Road Park Lake, Echo Park Lake, and Puddingstone Reservoir. Peck Road Park Lake and Echo Park Lake are located in the Los Angeles River watershed. Puddingstone Reservoir is located in the San Gabriel River watershed.

- Source Analysis

  The manufacturing and use of OC pesticides and PCBs are currently banned and no additional allowances for new sources of discharges are expected in the Los Angeles Area Lakes Toxics TMDL. Source control BMPs and pollutant removal are the most suitable courses of action to reduce OC pesticides and PCBs. The TMDL identified many historic and current loadings of pollutants into Peck Road Park Lake, Echo Park Lake, and Puddingstone Reservoir including construction sites that would be covered under this General Permit. Therefore, construction stormwater dischargers are considered Responsible Dischargers for the Los Angeles Area Lakes Toxics TMDL.

- Waste Load Allocation Translation

  The Los Angeles Area Lakes TMDL assigns concentration-based waste load allocations for OC pesticides and PCBs in the water column to be met at the construction site's discharge location(s) into Peck Road Park Lake, Echo Park Lake, and Puddingstone Reservoir, summarized in Table 53 through Table 55 below.

Table 53 – Peck Road Park Lake Toxics Waste Load Allocation

Pollutant	Waste Load Allocation – Water Column (mg/L)
Chlordane	5.9×10^{-7}
Dieldrin	1.4×10^{-7}
Total DDTs	5.9×10^{-7}
Total PCBs	1.7×10^{-7}

269 Los Angeles Regional Water Quality Control Board, Los Angeles Area Lakes Waters Toxics TMDL (May 2011) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Lakes/LALakesTMDLsEntireDocument.pdf> [as of April 28, 2022] (Los Angeles and Long Beach Harbor Water TMDL)

Table 54 – Echo Park Lake Toxics Waste Load Allocation

Pollutant	Waste Load Allocation – Water Column (mg/L)
Chlordane	5.9×10^{-7}
Dieldrin	1.4×10^{-7}
Total PCBs	1.7×10^{-7}

Table 55 – Puddingstone Reservoir Toxics Waste Load Allocation

Pollutant	Waste Load Allocation – Water Column (mg/L)
Chlordane	5.7×10^{-7}
Dieldrin	1.4×10^{-7}
Total DDTs	5.9×10^{-7}
Total PCBs	1.7×10^{-7}

The May 2021 draft of the Construction Stormwater General Permit reissuance proposed a translation of the waste load allocations into numeric effluent limitations. However, the translated numeric effluent limitations for chlordane, DDT, dieldrin, and PCBs in the Los Angeles Area Lakes Toxics TMDL were below the respective reporting limits for the constituents and would render determining compliance at the point of discharge infeasible.

Dischargers that discharge to the applicable Los Angeles Area Lakes waterbodies are to conduct a soil screening investigation for chlordane, DDT, dieldrin, and PCBs (as applicable) as part of the pollutant source assessment to determine whether they are Responsible Dischargers per Attachment H, Section I.G.5. Dischargers are considered Responsible Dischargers if the TMDL analytes are measured above their respective reporting limits and will be required to comply with a numeric effluent limitation of 100 mg/L total suspended solids (TSS) as the applicable limitation for each of the applicable TMDL-pollutants identified through the soil screening investigation.

State Water Board staff reviewed literature[270] and concluded that measurements of total suspended solids at the point of discharge,

270 Nasrabadi T, Ruegner H, Schwientek M, Bennett J, Fazel Valipour S, Grathwohl P (2018) “Bulk metal concentrations versus total suspended solids in rivers: Time-invariant & catchment-specific relationships.”;
Washington Department of Ecology (2004) “A Total Maximum Daily Load Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River.”;
Angela Gorgoglione, Fabián A. Bombardelli, Bruno J. L. Pitton, Lorence R. Oki, Darren L. Haver and Thomas M. Young (2018) “Role of Sediments in Insecticide Runoff from Urban Surfaces: Analysis and Modeling.”

following a non-visible pollutant monitoring trigger, are the most reasonable way to assess presence of chlordane, DDT, dieldrin, and PCBs, as these organic pollutants are readily sorbed to sediment.

The measurement of total suspended solids at or above of 100 mg/L is an appropriate indicator of the presence of chlordane, DDT, dieldrin, and PCBs in runoff, if the pre-project soil analysis (described in Attachment H, Section I.G.5) demonstrated these pollutants are present in the soil. There is a strong positive correlation between total suspended solids and chlordane, DDT, dieldrin, and PCBs, indicating that concentrations of pollutants increase and decline proportionally with the TSS concentrations. If the constituents were measured in the soil at or above the reporting limit, a small fraction will be in the TSS sample as well.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of toxic pollutants associated with the impaired water bodies, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the metals. Furthermore, the Responsible Discharger shall compare all non-visible sampling and analytical results to the TSS numeric effluent limitation to address toxic pollutants associated with the impairment of the water body. Exceedances of the TSS numeric effluent limitation equates to an exceedance of each applicable TMDL-specific pollutant identified in the soil screening investigation.

  The Los Angeles Regional Water Quality Control Board has not adopted an Implementation Plan or a compliance schedule for the toxic pollutants addressed by the Los Angeles Area Lakes Toxics TMDL. Therefore, Responsible Dischargers are required to achieve compliance with the TSS numeric effluent limitation by the effective date of this General Permit.

vii. Los Angeles and Long Beach Harbor Waters TMDL[271]

The Los Angeles Regional Water Quality Control Board adopted the Los Angeles and Long Beach Harbor Waters TMDL on May 5, 2011, to address

271 Los Angeles Regional Water Quality Control Board, Total Maximum Daily Load for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters (May 2011) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R11-008_RB_BPA.pdf> [as of May 20, 2021] (Los Angeles and Long Beach Harbor Waters TMDL)

the impairment and affected benthic communities of the Dominguez Channel, Greater Los Angeles, and Long Beach Harbor Waters due to cadmium, certain polyaromatic hydrocarbon (PAH) compounds, chlordane, chromium, copper, DDT, dieldrin, lead, mercury, polychlorinated biphenyls (PCBs), toxaphene, toxicity, and zinc.

- Source Analysis

  Chromium, copper, lead, mercury, PAHs, and zinc are currently deposited into the watershed via urban runoff and then washed into storm drains and channels that discharge to the Dominguez Channel and Greater Harbor Waters. Organochlorine (OC) pesticides (chlordane, DDT, dieldrin) and PCBs are legacy pollutants and remain present in the environment. Urban runoff and rainfall mobilize OC pesticides, PAHs, and PCBs bound to fine-grained particles, which are then washed into storm drains and channels that discharge to the Dominguez Channel and Greater Harbor Waters. Runoff from construction sites covered under this General Permit has the potential to transport these toxic pollutants into the waters. Therefore, construction stormwater dischargers are considered Responsible Dischargers for the Los Angeles and Long Beach Harbor Waters Toxics TMDL.

- Waste Load Allocation Translation

  1) Dominguez Channel and Torrance Lateral Freshwater Wet Weather Interim Waste Load Allocations

     This TMDL assigns interim concentration-based waste load allocations for copper, lead, and zinc to Responsible Dischargers to be met at the construction site's discharge location(s) for discharges into the Dominguez Channel or Torrance Lateral. The interim concentration-based waste load allocations will be translated to numeric action levels as an interim target for Responsible Dischargers until the final waste load allocations apply. The compliance deadline of the interim waste load allocations is upon effective date of the TMDL and therefore, apply at that time. The interim numeric action levels are shown in Table 56 below.

Table 56 – Dominguez Channel and Torrance Lateral Interim Waste Load Allocation Translation

Pollutant	Waste Load Allocation (ug/L)	Interim Numeric Action Level (mg/L)
Total Copper	207.51	0.20751
Total Lead	122.88	0.12288
Total Zinc	898.87	0.89887

2) Dominguez Channel and Torrance Lateral Wet-Weather Final Waste Load Allocations

This TMDL assigns wet-weather final concentration-based waste load allocations for copper, lead, and zinc to Responsible Dischargers to be met at the construction site's discharge location(s) for discharges into the Dominguez Channel (above Vermont Avenue).

Exxon Mobil Torrance Refinery and "all other dischargers" are assigned concentration-based waste load allocations of copper, lead, and zinc equal to the sediment targets to be met at the construction site's discharge location(s) for discharges into the Dominguez Channel and Torrance Lateral, shown in Table 57 below. Responsible Dischargers are assumed to be included in the "all other dischargers" definition. The concentration-based waste load allocations are translated into numeric effluent limitations. However, the numeric effluent limitations are not immediately effective because the compliance deadline for attaining the waste load allocation for dischargers into Dominguez Channel and Torrance Lateral is beyond this General Permit's term.

Table 57 – Dominguez Channel and Torrance Lateral Final Waste Load Allocation

Pollutant	Waste Load Allocation* (mg/L)
Total Copper	0.0097
Total Lead	0.0427
Total Zinc	0.0697

*Hardness used = 50 mg/L. Recalculated concentration-based allocations using ambient hardness at the time of sampling are considered consistent with the assumptions and requirements of these waste load allocations. In addition to the waste load allocations above, samples collected during flow conditions less than the 90th percentile of annual flow rates must demonstrate that the acute and chronic hardness dependent water quality criteria provided in the CTR are achieved.

The May 2021 draft of the Construction Stormwater General Permit reissuance proposed a translation for the final total copper, lead, and zinc waste load allocations into numeric effluent limitations as the waste load allocations were concentration-based and assigned at the point of discharge. However, this General Permit incorporates a soil screening investigation and a total suspended solids numeric effluent limitation to assess compliance with the final waste load allocations for total copper, lead, and zinc.

Starting at the effective date of the final waste load allocations, March 23, 2032, dischargers that discharge to the Dominguez Channel and Torrance Lateral are to conduct a soil screening investigation for

copper, lead, and zinc as part of the pollutant source assessment to determine whether they are Responsible Dischargers per Attachment H Section I.G.5. Dischargers are considered Responsible Dischargers if the TMDL analytes are measured above the analytical reporting limit and will be required to comply with a numeric effluent limitation of 100 mg/L total suspended solids (TSS) as the applicable limitation for each of the applicable TMDL-pollutants identified through the soil screening investigation, instead of the numeric effluent limitations for total copper, lead, and zinc.

State Water Board staff reviewed literature[272] and concluded that measurements of TSS at the point of discharge, following a non-visible pollutant monitoring trigger, are the most reasonable way to assess the presence of copper, lead, and zinc, as these metals are a readily sorbed to sediment, which is the most common pollutant discharged from construction sites and can be managed effectively with BMPs.

Staff determined the measurement of TSS at or above 100 mg/L is an appropriate indicator of the presence of copper, lead, and zinc in runoff, if the pre-project soil monitoring (described in Attachment H, Section I.G.5) demonstrated these pollutants are present in the soil. There is a strong positive correlation between TSS and metals, indicating that concentrations of pollutants increase and decline proportionally with the TSS concentrations. If the constituents were measured in the soil at or above the analytical reporting limit, a small faction will be in the TSS sample as well.

3) Dominguez Channel Estuary and Greater Los Angeles and Long Beach Harbor Waters Interim Sediment Waste Load Allocations

   This TMDL assigns concentration-based interim sediment waste load allocations for copper, lead, zinc, DDT, PAHs, and PCBs to Responsible Dischargers for discharges into the Dominguez Channel Estuary and Greater Harbor Waters, shown in Table 58 below.

272 Nasrabadi T, Ruegner H, Schwientek M, Bennett J, Fazel Vailpour S, Grathwohl P (2018) “Bulk metal concentrations versus total suspended solids in rivers: Time-invariant & catchment-specific relationships.”

Table 58 – Dominguez Channel Estuary and Greater Harbor Waters Interim Sediment Waste Load Allocations in mg/kg sediment

Water Body	Copper	Lead	Zinc	DDT	PAHs	PCBs
Dominguez Channel Estuary	220.0	510.0	789.0	1.727	31.60	1.490
Long Beach Inner Harbor	142.3	50.4	240.6	0.070	4.58	0.060
Los Angeles Inner Harbor	154.1	145.5	362.0	0.341	90.30	2.107
Long Beach Outer Harbor (inside breakwater)	67.3	*46.7	150	0.075	*4.022	0.248
Los Angeles Outer Harbor (inside breakwater)	104.1	*46.7	150	0.097	*4.022	0.310
Los Angeles River Estuary	53.0	*46.7	183.5	0.254	4.36	0.683
San Pedro Bay Near/Offshore Zones	76.9	66.6	263.1	0.057	*4.022	0.193
Los Angeles Harbor – Cabrillo Marina	367.6	72.6	281.8	0.186	36.12	0.199
Los Angeles Harbor – Consolidated Slip	1470.0	1100.0	17050	1.724	386.00	1.920
Los Angeles Harbor – Inner Cabrillo Beach	129.7	*46.7	163.1	0.145	*4.022	0.033
Fish Harbor	558.6	116.5	430.5	40.5	2102.7	36.6

*Values are also the final allocation

Directly implementing the final waste load allocations would be impractical, costly, and not aligned with the monitoring requirements in this General Permit. As mentioned above, this TMDL associates bed toxicity with discharges of metals, OC pesticides, PAHs, and PCBs bound to sediment particulates. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

4) Dominguez Channel Estuary and Greater Harbor Waters Final Water-Column Waste Load Allocations

This TMDL assigns concentration-based final waste load allocations for the metals and organic compounds identified in Table 57 and Table 58 below. The waste load allocations are to be met in the water column for discharges to Dominguez Channel Estuary and the Greater Harbor Waters. Greater Harbor Waters include Inner and

Outer Harbor, Main Channel, Consolidated Slip, Southwest Slip, Fish Harbor, Cabrillo Marina, Inner Cabrillo Beach, Los Angeles River Estuary, and San Pedro Bay. The concentration-based waste load allocations are translated to numeric action levels because the waste load allocations are assigned to be met in the receiving waters and not at the point of discharge. The assigned waste load allocations of copper, lead, and zinc are based on the Criteria Chronic Concentration, and are inappropriate to assign to stormwater discharges. Therefore, the California Toxics Rule (CTR) Criterion Maximum (acute) Concentration is applied to Responsible Dischargers. The units are converted from ug/L to mg/L to be consistent with the reporting units in SMARTS. The numeric action levels assigned to Responsible Dischargers are shown in Table 59 and Table 60 below.

Table 59 – Dominguez Channel Estuary Final Water Column Waste Load Allocation Translations

Pollutant	Waste Load Allocation (ug/L)	Dissolved Saltwater Criterion Maximum Concentration (ug/L)	Total Saltwater Criterion Maximum Concentration (ug/L)	Numeric Action Level (mg/L)
4,4-DDT	0.00059			$5.9 X10^{-7}$
Chlordane	0.00059			$5.9 X10^{-7}$
Dieldrin	0.00014			$1.4 X10^{-7}$
Total Copper	3.73	4.8	5.8**	0.0058
Total Lead	8.53	210	221**	0.221
PAHs	0.049			$4.9 X10^{-5}$
Total PCBs	0.00017			$1.7 X10^{-7}$
Total Zinc	85.6	90	95**	0.095

* CTR human health criteria were not established for total PAHs. Therefore, the CTR criterion for individual PAHs of 0.049 µg/L is applied individually to benzo(a)anthracene, benzo(a)pyrene, and chrysene. The CTR criterion for Pyrene of 11,000 µg/L is assigned as an individual waste load allocation to Pyrene. Other PAH compounds in the CTR shall be screened as part of the TMDL monitoring.
**Values were rounded to match Criterion significant figures.

Table 60 – Greater Harbor Final Water Column Waste Load Allocation Translations

Pollutant	Waste Load Allocation (ug/L)	Dissolved Saltwater Criterion Maximum Concentration (ug/L)	Total Saltwater Criterion Maximum Concentration (ug/L)	Numeric Action Level (mg/L)
4,4-DDT	0.00059			$5.9 X10^{-7}$
Total Copper	3.73	4.8	5.8**	0.0058

Pollutant	Waste Load Allocation (ug/L)	Dissolved Saltwater Criterion Maximum Concentration (ug/L)	Total Saltwater Criterion Maximum Concentration (ug/L)	Numeric Action Level (mg/L)
Total Lead	8.53	210	221**	0.221
Total PCBs	0.00017			$1.7 X10^{-7}$
Total Zinc	85.6	90	95**	0.095

**Values were rounded to match Criterion significant figures.

5) Dominguez Chanel Estuary, Consolidated Slip, and Fish Harbor Final Sediment Waste Load Allocations

This TMDL assigns concentration-based final sediment waste load allocations for cadmium, chromium, and mercury to be met at the construction site's discharge point(s) for discharges into Consolidated Slip and Fish Harbor, cadmium discharges into Dominguez Channel Estuary and Consolidated Slip, and chromium discharges into Consolidated Slip.

Table 61 – Dominguez Channel Estuary, Consolidated Slip and Fish Harbor Final Sediment Waste Load Allocations

Pollutant	Waste Load Allocation (mg/kg sediment)
Cadmium*	1.2
Chromium**	81
Mercury***	0.15

* Applies to Dominguez Channel Estuary and Consolidated Slip
** Applies to Consolidated Slip
*** Applies to Consolidated Slip and Fish Harbor

Directly implementing the final waste load allocations would be impractical, costly, and not aligned with the monitoring requirements in this General Permit. As mentioned above, this TMDL associates bed toxicity with discharges of metals bound to sediment particulates. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that discharge into the

Dominguez Channel or the Torrance Lateral, and identify on-site sources of copper, lead, and zinc through the required pollutant source assessment, shall compare all non-visible sampling and analytical results to the applicable interim numeric action levels for the metals. Responsible Dischargers that discharge into the Dominguez Channel Estuary or the Greater Harbor waters, and that identify on-site sources of the metals and toxic pollutants listed in Table 60 and Table 61 are to implement BMPs specific to preventing or controlling stormwater contact with those metals and toxic pollutants. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2, in order to address applicable interim sediment-based waste load allocations.

If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the interim numeric action levels and TSS numeric effluent limitations in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to the metals and toxic pollutant sources are expected to meet the assigned numeric action levels and TSS numeric effluent limitations.

The effective date of the TMDL, March 23, 2012, is the interim compliance deadline. Since this compliance deadline has passed, the requirements to meet the interim numeric action levels shall be met by the effective date of this General Permit. Responsible Dischargers are to comply with the final numeric action levels and TSS numeric effluent limitations by March 23, 2032, the final compliance deadline for the Los Angeles and Long Beach Harbor. Future reissuances of this General Permit may incorporate additional or revised compliance requirements or interim targets to progress towards the required final compliance when a final numeric action level or TSS numeric effluent limitation applies.

viii. Los Angeles River Metals TMDL[273]

The Los Angeles Regional Water Quality Control Board adopted the Los Angeles River Metals TMDL on April 9, 2015, to address the impairment of

273 Los Angeles Regional Water Quality Control Board, Amendment to the Water Quality Control Plan for the Los Angeles Region to Revise the Los Angeles River and Tributaries Metals TMDL (April 2015) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R15-004_BPA_CH_7.pdf> [as of May 20, 2021] (Los Angeles River Metals TMDL)

Los Angeles River and its tributaries due to cadmium, copper, lead, selenium, and zinc.

- Source Analysis

  Dry weather loading from storm drains contributes a large percentage of the loading because of low flows but high concentration of dissolved metals. During wet weather most metals loadings are in the particulate form where stormwater flows contribute a large percentage of cadmium, copper, lead, and zinc loading. Studies are underway to evaluate whether selenium levels represent a "natural condition" for this watershed.[274]

- Waste Load Allocation Translation

  1) Dry-weather Waste Load Allocations

     The Los Angeles River Metals TMDL assigns concentration-based waste load allocations for dry-weather. Non-Stormwater Discharges (NSWDs) are only authorized in this General Permit if the terms and conditions in Order, Section IV.A are met to control the discharge of pollutants from the construction site. Order, Section IV.B prohibits all NSWDs not authorized under Order, Section IV.A; therefore, all unauthorized NSWDs must be either eliminated or have regulatory coverage under a separate NPDES permit. Authorized NSWDs, as defined in this General Permit, are authorized because these discharges do not commingle with stormwater associated with construction activity. The Regional Water Board may impose additional requirements on NSWDs if deemed necessary per site-specific analysis.

  2) Wet-weather Waste Load Allocations

     The Los Angeles River Metals TMDL assigns a mass-based waste load allocation per construction area in grams per day per acre (g/d/ac) for cadmium, copper, lead, and zinc at the construction site's discharge point(s) for discharges into the Los Angeles River or tributaries (Los Angeles River Watershed).[275] In addition, daily storm volume flows are required to calculate the waste load allocation for each metal. The waste load allocations are shown in Table 62 below.

     Directly implementing the copper, lead, and zinc waste load allocations would result in a unique mass load for each Responsible Discharger depended on the daily stormwater flows and the

274 Los Angeles River Metals TMDL, p. 4.

275 Los Angeles River Metals TMDL, p. 13.

construction site's acreage. Requiring Responsible Dischargers to calculate the site-specific mass load of a pollutant would be impractical, costly, and not aligned with the monitoring requirements in this General Permit.

The Los Angeles River Metals TMDL Staff Report allows for compliance to be assessed based on concentration. Additionally, the TMDL Staff Report states, "the wet-weather mass-based waste load allocations for the general construction and industrial stormwater permittees (Table 6-12) will be incorporated into watershed specific general permits. Concentration-based permit conditions may be set to achieve the mass-based waste load allocations. These concentration-based conditions would be equal to the concentration-based waste load allocations assigned to the other NPDES permits."

This TMDL states "each general construction stormwater permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with the final waste load allocations."[276] Therefore, it is consistent with the requirements and assumptions of the waste load allocation to apply the Los Angeles River Metals TMDL Numeric Targets as concentration-based numeric action levels (permit conditions).

The numeric action level iterative process in this General Permit requires dischargers to implement and evaluate performance of site-specific BMPs to demonstrate compliance with applicable waste load allocations. The units are converted from ug/L to mg/L to be consistent with the reporting units in SMARTS. The translated numeric action levels are shown in Table 62 below and a WER of 3.97 is used for copper.

276 Los Angeles River Metals TMDL, p. 23.

Table 62 – Los Angeles River Waste Load Allocations Translation for Total Recoverable Metals

Pollutant	Waste Load Allocation (g/d/ac)	Numeric Target (ug/L)	Numeric Action Level (mg/L)
Cadmium*	WER x (7.6×10^{-12}) x daily volume (L) – (4.8×10^{-6})	WER x 3.1	0.0031
Copper**	WER x (4.2×10^{-11}) x daily volume (L) – (2.6×10^{-5})	WER x 17	0.06749
Lead*	WER x (4.2×10^{-11}) x daily volume (L) – (8.7×10^{-5})	WER x 94	0.094
Zinc*	WER x (3.9×10^{-10}) x daily volume (L) – (2.2×10^{-4})	WER x 159	0.159

* WER(s) have a default value of 1.0 unless site-specific WER(s) are approved.
**The WER for this constituent is 3.97.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that discharge into the Los Angeles River or its tributaries, and that identify on-site sources of cadmium, copper, lead, and/or zinc through the required pollutant source assessment, shall compare all non-visible sampling and analytical results to the applicable numeric action levels for the identified metals.

  Responsible Dischargers shall install, operate, and maintain site-specific BMPs to address identified on-site sources of cadmium, copper, lead, and/or zinc.

  If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to the sources of metals are expected to meet the numeric action levels.

  The final compliance deadline for the Los Angeles River Metals TMDL was January 11, 2016. Since this compliance deadline has passed, the numeric action levels are applicable upon the effective date of this General Permit.

ix. Los Cerritos Channel Metals TMDL[277]

The U.S. EPA adopted the Los Cerritos Metals TMDL on March 17, 2010, to address the impairment of Los Cerritos Channel due to copper, lead, and zinc.

- Source Analysis

  Sources of metals from construction sites include sediment-bound metals, construction materials, and equipment used on construction sites. Additionally, in highly urbanized Los Cerritos Channel freshwater watershed, re-development of former industrial sites has a higher potential to discharge sediments laden with metals. During wet-weather, runoff from construction sites has the potential to contribute metals loadings to the Channel. Building materials and construction waste exposed to stormwater can leach and contribute metals to waterways.[278] Therefore, construction sites covered under this General Permit are considered Responsible Dischargers for the Los Cerritos Channel Metals TMDL.

- Waste Load Allocation Translation

  1) Dry-weather Waste Load Allocation

     The Los Cerritos Channel Metals TMDL assigns a concentration-based waste load allocation for dry-weather. Non-Stormwater Discharges (NSWDs) are authorized in this General Permit if Order, Section IV.A terms and conditions are met to control the discharge of pollutants from the construction site. Order, Section IV.B prohibits all NSWDs not authorized under Order, Section IV.A; therefore, all unauthorized NSWDs must be either eliminated or have regulatory coverage under a separate NPDES permit. Authorized NSWDs, as defined in this General Permit, are authorized because these discharges do not commingle with stormwater associated with construction activity. The Regional Water Board may impose additional requirements on NSWDs if deemed necessary per site-specific analysis.

277 U.S. Environmental Protection Agency Region IX, Los Cerritos Channel Total Maximum Daily Loads for Metals (March 2010) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Los%20Cerritos%20Channel%20Metals%20TMDL/03-18-10LosCerritosChannel-metalsTMDLs.pdf> [as of April 28, 2022]

278 Los Cerritos Channel Metals TMDL, p. 20.

2) Wet-weather Waste Load Allocations

The Los Cerritos Channel Metals TMDL assigns a mass-based waste load allocation per construction area in grams per day per acre (g/day/ac) for copper, lead, and zinc for discharges into the Los Cerritos Channel. In addition, daily storm volume flows are required to calculate the waste load allocation for each metal. The mass-based waste load allocations are shown in Table 63 below.

Table 63 – Los Cerritos Mass-based Waste Load Allocations

Pollutant	Waste Load Allocation (g/day/ac)
Copper	0.497×10^{-3} x daily volume(L)
Lead	2.835×10^{-3} x daily volume(L)
Zinc	4.860×10^{-3} x daily volume(L)

Directly implementing the copper, lead, and zinc mass-based waste load allocations would result in a unique mass load for each Responsible Discharger, dependent on the daily stormwater flows and the construction site's acreage. Requiring Responsible Dischargers to calculate the site-specific mass loading of a pollutant(s) is impractical, costly, and not aligned with the monitoring requirements of this this General Permit. The Los Cerritos Channel TMDL Implementation Plan[279] requires incorporation of the waste load allocations in this General Permit as wet-weather permit limitations expressed as event mean concentrations.

The term permit limitation in the TMDL implementation plan is defined as "a water-quality based effluent limitation or a receiving water limitation…permittees may demonstrate compliance with wet-weather waste load allocations in any one of three ways. First, general industrial and construction storm water permittees may be deemed in compliance with permit limitations if they demonstrate that there are no exceedances of the permit limitations at their discharge points or outfalls. Second, general industrial and construction storm water permittees may be deemed in compliance with permit limitations if they demonstrate that there are no exceedances of the permit limitations in the receiving water at, or downstream of, the

279 Los Angeles Regional Water Quality Control Board, Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate the Implementation Plan for the Total Maximum Daily Loads for Metals in the Los Cerritos Channel <https://www.waterboards.ca.gov/losangeles/board_decisions/basin_plan_amendments/technical_documents/99_New/Los%20Cerritos%20Metals%20implementation%20plan%20and%20schedule%20BPA_rev%20053013.pdf> [as of April 28, 2022] (Los Cerritos Channel Metals TMDL Implementation Plan)

permittee's outfalls. Third, if permittees provide a quantitative demonstration that control measures and best management practices (BMPs) will achieve wet-weather waste load allocations consistent with the schedule in Table 7-20.2, then compliance may be demonstrated by implementation of those control measures and BMPs, subject to Executive Officer approval."[280] The assigned mass-based waste load allocations require site-specific calculations that are incompatible with the monitoring and reporting requirements in this General Permit. Therefore, it is consistent with the requirements and assumptions of the waste load allocations to implement the Los Cerritos Channel Metals TMDL Numeric Targets as concentration-based numeric action levels to align the mass-based waste load allocations to the requirements in this General Permit. The TMDL implementation plan provided Responsible Dischargers the above-stated three options for demonstrating waste load allocation compliance. The option implemented in this General Order is to implement the TMDL-specific numeric action levels at the point of discharge for the Responsible Discharger's construction site. The assigned concentration based numeric action levels are shown in Table 64 below. The units are converted from ug/L to mg/L to be consistent with the reporting units in SMARTS.

Table 64 – Los Cerritos Channel Waste Load Allocations (Concentration-based, Total Recoverable)

Pollutant	Numeric Targets (ug/L)	Numeric Action Levels (mg/L)
Copper	9.8	0.0098
Lead	55.8	0.0558
Zinc	95.6	0.0956

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that discharge into the Los Cerritos Channel and that identify on-site sources of copper, lead, and zinc through the required pollutant source assessment, shall compare all non-visible sampling and analytical results to the applicable numeric action levels for the identified metals.

  If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible

280 Los Cerritos Channel Metals TMDL Implementation Plan, p. 4-5.

Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to the metals' sources are expected to meet the assigned numeric action levels.

The TMDL's final compliance deadline was September 30, 2017. Since this compliance deadline has passed, the numeric action levels are applicable upon the effective date of this General Permit.

x. Machado Lake Toxics TMDL[281]

The Los Angeles Regional Water Quality Control Board adopted the Machado Lake Toxics TMDL on September 2, 2010, to address the impairment of Machado Lake due to chemical group organochlorine (OC) pesticides (chlordane, DDT, dieldrin) and polychlorinated biphenyls (PCBs).

- Source Analysis

  The point sources of OC pesticides and PCBs into Machado Lake are stormwater and urban runoff discharges from the municipal separate storm sewer system (MS4), the California Department of Transportation, and general construction and industrial dischargers. Therefore, construction sites covered under this General Permit are considered Responsible Dischargers for the Machado Lake Toxics TMDL.

  OC pesticides are no longer legally sold or used, but remain ubiquitous in the environment, bound to fine-grained particles. The chemicals are transported to new locations when these particles become waterborne. The more recent small discharges of OC pesticides and PCBs to Machado Lake most likely come from the erosion of pollutant-laden sediment further up in the watershed. Urban runoff and rainfall higher in the watershed mobilize the particles, which are then washed into storm drains and channels that discharge to the lake. Stormwater and urban runoff discharges to Machado Lake occur through the Wilmington Drain, Project 77, and Project 510 subdrainage systems. The estimated contributions of OC pesticides and PCBs from point sources is much smaller than the estimated contribution from internal lake sediments. However, a waste load allocation is assigned to ongoing point source discharges to the lake.

281 Los Angeles Regional Water Quality Control Board, Machado Lake Pesticides and PCBs TMDL (September 2, 2010), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R10-008_RB_BPA.pdf> [as of May 20, 2021] (Machado Lake Toxics TMDL)

- Waste Load Allocation Translation

  The Machado Lake Toxics TMDL assigns a suspended sediment concentration-based waste load allocations for OC pesticides and PCBs to be met at the construction site's discharge location(s) for discharges into Machado Lake, shown in Table 65 below.

Table 65 – Machado Lake Toxics Waste Load Allocations

Pollutant	Waste Load Allocation of Suspended Sediment-Associated Contaminants (ug/kg dry weight)
Chlordane	3.24
DDD (all congeners)	4.88
DDE (all congeners)	3.16
DDT (all congeners)	4.16
Dieldrin	1.9
Total DDTs	5.28
Total PCBs	59.8

Requiring Responsible Dischargers to directly implement the waste load allocation and sample for the pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most toxic pollutants loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.
2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of the toxic pollutants associated with the impaired water body, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the toxic pollutants. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2.

  The Machado Lake Toxics TMDL's final compliance deadline was September 30, 2019. Since this compliance deadline has passed,

compliance with the waste load allocations shall be met upon the effective date of this General Permit.

xi. Marina del Rey Toxics TMDL[282]

The Los Angeles Regional Water Quality Control Board adopted the Marina del Rey Toxics TMDL on February 6, 2014, to address the impairment of Marina del Rey Harbor due to chlordane, copper, DDT, dieldrin, fish consumption advisory, lead, polychlorinated biphenyls (PCBs), sediment toxicity, and zinc. During the development of this TMDL, review of available data indicated that dieldrin is no longer a cause of impairment, and that there is a dissolved copper impairment in the water column and sediment.

- Source Analysis

  Urban stormwater has been recognized as a substantial source of metals. Numerous researchers have documented that the most prevalent metals in urban stormwater (i.e., copper, lead, and zinc) are consistently associated with suspended solids. Because metals are typically associated with fine particles in stormwater runoff, they have the potential to accumulate in marine sediments where they may pose a toxicity risk. A majority of organic constituents in stormwater are also associated with particulates. Once the particles accumulate in the sediments in the harbor, the sediments themselves can become a source through re-suspension and are thus assigned load allocations. Therefore, construction sites covered under this General Permit are considered Responsible Dischargers for the Marina del Rey Toxics TMDL.

  In addition to stormwater runoff, copper-based anti-fouling paints are recognized as substantial sources of dissolved copper in the water column and sediments. Site-specific modeling indicated that 100 percent of copper loading came from copper-based anti-fouling hull paint and hull cleaning activities. Direct deposition of airborne particles to the water surface may be a minor source responsible for contributing metals and organic pollutants to the Marina del Rey Harbor.[283]

282 Los Angeles Regional Water Quality Control Board, Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Marina del Rey Harbor Toxic Pollutants TMDL (February 6, 2014), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R14-004_RB_BPA.pdf> [as of May 20, 2021] (Marina del Rey Harbor Toxics TMDL)

283 Marina del Rey Harbor Toxics TMDL, p. 3-4.

- Waste Load Allocation Translation

  The Marina del Rey Toxics TMDL assigns a mass-based waste load allocation per construction area in grams per day per acre (g/day/ac) or milligrams per day per acre (mg/day/ac) for chlordane, copper, total DDTs, Dichlorodiphenyldichloroethylene (p,p'-DDE), lead, total PCBs, and zinc for discharges into the Marina del Rey Harbor. The mass-based waste load allocations are shown in Table 66 and Table 67 below.

Table 66 – Marina del Rey Toxics Metals Waste Load Allocations

Pollutant	Waste Load Allocation (g/yr/ac)
Copper	1.9
Lead	2.6
Zinc	8.5

Table 67 – Marina del Rey Toxics OC Pesticides Waste Load Allocations

Pollutant	Waste Load Allocation (mg/yr/ac)
Chlordane	0.03
Total PCBs	1.3
Total DDTs	0.09
p,p'-DDE	0.12

Requiring Responsible Dischargers to directly implement the waste load allocation and sample for the pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most toxic pollutants loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.
2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

100 percent of the copper loadings into the Marina del Rey Harbor comes from the leaching of antifouling hull paint and from hull cleaning operations. Therefore, the copper numeric target will not be assigned to Responsible Dischargers and compliance with this waste load allocation shall be through compliance with this General Permit.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of the metals and toxic pollutants associated with the impaired water body, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the metals and toxic pollutants. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2.

  The Marina del Rey Toxics TMDL's final compliance deadline was March 22, 2016. Since this compliance deadline has passed, the waste load allocations shall be met upon the effective date of this General Permit.

xii. Oxnard Drain No. 3 Toxics TMDL[284]

The U.S. EPA adopted the Oxnard Drain No. 3 Toxics TMDL on October 6, 2011, to address the impairment of the Oxnard Drain No. 3 due to bifenthrin, chlorpyrifos, organochlorine (OC) pesticides (chlordane, DDT, dieldrin, and toxaphene), polychlorinated biphenyls, and sediment toxicity.

- Source Analysis

  The Oxnard Drain No. 3 Toxics TMDL identifies historic and current loadings of toxic pollutants, including construction sites that would be covered under this General Permit. During wet weather, discharges from construction sites have the potential to contribute toxic pollutant loadings. However, dry weather discharges have less potential to contribute to toxic pollutant loadings as non-stormwater discharges authorized by this General Permit are only authorized when they do not cause or contribute to a violation of any water quality standard. Therefore, construction sites covered under this General Permit are considered Responsible Dischargers for the Oxnard Drain No. 3 Toxics TMDL.

- Waste Load Allocation Translation

  The Oxnard Drain No. 3 Toxics TMDL assigns a concentration-based waste load allocation to construction stormwater discharges for 4,4'-

284 United States EPA Region IX, Total Maximum Daily Loads for Pesticides, PCBs, and Sediment Toxicity in Oxnard Drain No.3 (October 6, 2011), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Oxnard%20Drain%20No.%203%20Pesticides%20PCBs%20and%20Sediment%20Toxicity%20TMDL/oxnard-drain-3-tmdl-10-2011.pdf> [as of April 28, 2022] (Oxnard Drain No. 3 Toxics TMDL)

DDD, 4,4'-DDE, 4,4'-DDT, bifenthrin, chlorpyrifos, dieldrin, total chlordane, total PCBs, and toxaphene expressed as water, bed sediment and suspended sediment concentrations in ug/kg to be met at the construction site's discharge location(s) for discharges into the Oxnard Drain No. 3. OC pesticides and PCBs have an affinity for organic matter and will partition from water to organic substances such as sediment, benthic organisms, and fish, so the sediment allocations are applied, shown in Table 68 below.

Table 68 – Oxnard Drain No. 3 Waste Load Allocations

Pollutant	Waste Load Allocation of Suspended Sediment-Associated Contaminants (ug/kg dry weight)
4,4'-DDD	2.0
4,4'-DDE	2.2
4,4'-DDT	0.3
Bifenthrin	-
Chlordane, Total	3.3
Chlorpyrifos	-
Dieldrin	4.3
PCBs, Total	180
Sediment Toxicity	-
Toxaphene	360

Requiring Responsible Dischargers to directly implement the waste load allocation and sample for the pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most toxic pollutants loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.
2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of the toxic pollutants associated with the impaired water body, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the toxic pollutants.

Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2.

The Los Angeles Regional Water Quality Control Board has not adopted an Implementation Plan or a compliance schedule for the toxic pollutants addressed by the Oxnard Drain No. 3 Toxics TMDL. Therefore, Responsible Dischargers are required to achieve compliance with the waste load allocations upon the effective date of this General Permit.

xiii. San Gabriel River Metals and Selenium TMDL[285]

The U.S. EPA adopted the San Gabriel River Metals TMDL on March 26, 2007, to address the impairment of San Gabriel River, estuary, and tributaries due to copper, lead, selenium, and zinc. A TMDL was not developed for the elevated levels of selenium in Reach 6 during dry weather conditions because the sources of selenium appear to be related to natural levels of selenium in the soils.

- Source Analysis

  Sources of metals from construction sites include sediment-bound metals, construction materials, and equipment used on construction sites. Building materials and construction waste exposed to stormwater can leach and contribute metals to waterways. During dry weather, the potential contribution of metals loading from Responsible Dischargers is low.[286]

- Waste Load Allocation Translation

  1) Dry-weather Waste Load Allocation

     The San Gabriel River Metals TMDL assigns concentration-based and mass-based waste load allocations for dry-weather discharges of copper and selenium. Non-Stormwater Discharges (NSWDs) are authorized in this General Permit if Order, Section IV.A terms and conditions are met to control the discharge of pollutants from the construction site. Order, Section IV.B prohibits all NSWDs not authorized under Order, Section IV.A; therefore, all unauthorized NSWDs must be either eliminated or have regulatory coverage under a separate NPDES permit. Authorized NSWDs, as defined in this

285 U.S. Environmental Protection Agency Region IX, Total Maximum Daily Loads for Metals and Selenium San Gabriel River and Impaired Tributaries (March 26, 2007) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/San%20Gabriel%20River%20Metals%20TMDL/final_sangabriel_metalstmdl_3-27-07.pdf> [as of May 20, 2021] (San Gabriel River Metals TMDL)

286 San Gabriel River Metals TMDL, p. 22.

General Permit, are authorized because these discharges do not commingle with stormwater associated with construction activity. The Regional Water Board may impose additional requirements on NSWDs if deemed necessary per site-specific analysis.

2) Wet-weather Waste Load Allocations

The San Gabriel River Metals TMDL assigns a mass-based waste load allocation per construction area in kilograms per day (kg/d) for lead for discharges into the San Gabriel River Reach 2 watershed (all upstream reaches and tributaries) and Coyote Creek or its tributaries. The waste load allocations are shown in Table 69 and Table 70 below.

Table 69 – San Gabriel River Reach 2 Watershed Waste Load Allocation

Pollutant	Waste Load Allocation (kg/d)
Lead	0.8

Table 70 – Coyote Creek Watershed Waste Load Allocations

Pollutant	Waste Load Allocation (kg/d)
Copper	0.513
Lead	2.07
Zinc	3.0

The San Gabriel River Metals TMDL Implementation Plan[287] requires incorporation of the waste load allocations in this General Permit as permit limitations expressed as event mean concentrations. The term permit limitation is defined in the TMDL compliance plan as "a water-quality based effluent limitation or a receiving water limitation…permittees may demonstrate compliance with wet-weather waste load allocations in any one of three ways. First, general industrial and construction storm water permittees may be deemed in compliance with permit limitations if they demonstrate that there are no exceedances of the permit limitations at their discharge points or outfalls. Second, general industrial and construction storm water permittees may be deemed in compliance with permit limitations if they demonstrate that there are no exceedances of the permit

287 Los Angeles Regional Water Quality Control Board, Amendment to the Water Quality Control Plan – Los Angeles Region to Incorporate the Implementation Plan for the Total Maximum Daily Loads for Metals and Selenium in the San Gabriel River and Impaired Tributaries (June 6, 2013) <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/docs/R13-004_RB_BPA.pdf> [as of May 20, 2021] (San Gabriel River Metals TMDL Implementation Plan)

limitations in the receiving water at, or downstream of, the permittee's outfalls. Third, if permittees provide a quantitative demonstration that control measures and best management practices (BMPs) will achieve wet-weather waste load allocations consistent with the schedule in Table 7-20.2, then compliance may be demonstrated by implementation of those control measures and BMPs, subject to Executive Officer approval."[288]

The assigned mass-based waste load allocations require site-specific calculations that are incompatible with the monitoring and reporting requirements in this General Permit. Therefore, it is consistent with the requirements and assumptions of the waste load allocations to implement the San Gabriel River Metals and Selenium TMDL Numeric Targets as concentration-based numeric action levels to align the mass-based waste load allocations to the requirements in this General Permit. The TMDL implementation plan provided Responsible Dischargers the three above-stated options for demonstrating waste load allocation compliance and the appropriate option is to implement the TMDL-specific numeric action levels at the point of discharge for the Responsible Discharger's construction site. The assigned concentration-based numeric action levels are shown in Table 71 and Table 72 below. The units are converted from ug/L to mg/L to be consistent with the reporting units in SMARTS.

Table 71 – San Gabriel River Reach 2 Watershed Waste Load Allocation Translation (concentration-based, total recoverable)

Pollutant	Numeric Targets (ug/L)	Numeric Action Levels (mg/L)
Lead	166	0.166

Table 72 – Coyote Creek Watershed Waste Load Allocations (concentration-based, total recoverable)

Pollutant	Numeric Targets (ug/L)	Numeric Action Levels (mg/L)
Copper	27	0.027
Lead	106	0.106
Zinc	158	0.158

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that discharge into the San Gabriel River and that identify on-site sources of copper, lead, and zinc through the required pollutant source assessment, shall compare all

288 San Gabriel River Metals TMDL Implementation Plan, p. 4-5.

non-visible sampling and analytical results to the applicable numeric action levels for the identified metals.

If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to the metals sources are expected to meet the numeric action levels.

The San Gabriel River Metals TMDL's final compliance deadline was September 30, 2017. Since this compliance deadline has passed, the numeric action levels are applicable upon the effective date of this General Permit.

xiv. Santa Monica Bay Toxics TMDL[289]

The U.S. EPA adopted the Santa Monica Bay Toxics TMDL on March 26, 2012, to address the impairment for Santa Monica Bay due to DDTs and polychlorinated biphenyls (PCBs). Santa Monica Bay, as defined in this TMDL, is Point Dume to Point Vicente and the Palos Verdes shelf from Point Vicente to Point Fermin.

- Source Analysis

  DDTs are organochlorine insecticides widely used in the past on agricultural crops and to control disease-carrying insects. The United States banned the use of DDTs in 1972, except for public health emergencies involving insect diseases and control of body lice. Although use of DDTs is limited, it can persist in the environment, adhering strongly to soil particles. PCBs are mixtures of up to 209 individual chlorinated compounds (known as congeners). In 1976, the manufacturing of PCBs was prohibited because of evidence that they build up in the environment and can cause harmful health effects. Similar to DDTs, PCBs adhere to soil and can be transported into watersheds via erosion and stormwater runoff. Studies within the watershed indicated that concentrations of DDTs and PCBs in stormwater may exceed human health criteria. Therefore, construction sites covered

289 U.S. Environmental Protection Agency Region IX, Santa Monica Bay Total Maximum Daily Loads for DDTs and PCBs (March 26, 2012), <https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/SantaMonica/FinalSantaMonicaBayDDTPCBsTMDL.pdf> [as of May 20, 2021] (Santa Monica Bay Toxics TMDL)

under this General Permit are considered Responsible Dischargers for the Santa Monica Bay Toxics TMDL.

- Waste Load Allocation Translation

  The Santa Monica Bay Toxics TMDL assigns mass-based waste load allocations of 0.16 g/yr for DDT and 0.82 g/yr for PCBs to be met at the construction site's discharge location(s) for discharges into Santa Monica Bay. The waste load allocations are based on the aggregate area represented by individual permittees covered under this General Permit, which is roughly 0.56 percent of the watershed's total area. Table 73 shows the waste load allocation below.

Table 73 – Santa Monica Bay Toxics Waste Load Allocations

Pollutant	Waste Load Allocation (g/yr)
DDTs	0.16
PCBs	0.82

Permittees covered under this General Permit are not expected to perform individual sampling. Requiring Responsible Dischargers to directly implement the waste load allocation and sample for the pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most toxic pollutants loadings in this watershed are in particulate form and associated with wet-weather flows. Therefore, the following will address this TMDL:

1) Comply with the site-specific erosion and sediment control, and post-construction requirements in this General Permit.
2) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of the toxic pollutants associated with the impaired water body, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the toxic pollutants. Furthermore, Responsible Dischargers are to comply with the RUSLE 2 modeling requirements in Attachment H, Section I.G.2.

The Los Angeles Regional Water Quality Control Board has not adopted an Implementation Plan or a compliance schedule for the toxic pollutants addressed by the Santa Monica Bay Toxics TMDL. Therefore, Responsible Dischargers are required to achieve compliance with the waste load allocations upon the effective date of this General Permit.

xv. San Diego Creek and Newport Bay Toxics TMDL [290,291]

The U.S. EPA adopted the San Diego Creek and Newport Bay Toxics TMDL on June 14, 2002, to address the impairments of San Diego Creek and Newport Bay due to cadmium, chlordane, chlorpyrifos, chromium, copper, DDT, diazinon, dieldrin, lead, mercury, polychlorinated biphenyls (PCBs), selenium, toxaphene, and zinc. However, the Santa Ana Regional Water Quality Control Board adopted a separate Revised Organochlorine Compounds (chlordane, DDT, dieldrin, PCBs, and toxaphene) TMDL on July 15, 2011, which revises the loading capacities in the U.S. EPA TMDL based on an updated impairment assessment. For the purpose of this General Permit and factsheet, both TMDLs will be addressed as a single San Diego Creek and Newport Bay Toxics TMDL.

- Source Analysis

  The San Diego Creek and Newport Bay Toxics TMDL provides source analyses specific to the pollutant categories: metals, organochlorine compounds, chromium, and mercury. These pollutants are known to adsorb or adhere to sediment which are transported through the watershed via soil erosion and runoff. Surface runoff from natural background and man-made contributions are estimated to be the largest source of metals within San Diego Creek and its tributaries. The largest source of dissolved metals (except copper) to Upper and Lower Newport Bay are thought to be freshwater-borne loads from San Diego Creek. Likewise, the main source of continual loadings of organochlorine pollutants to the Newport Bay watershed is also attributed to erosion of

290 United States EPA, Total Maximum Daily Loads for Toxic Pollutants San Diego Creek and Newport Bay, California (June 14, 2002), <https://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/docs/sd_crk_nb_toxics_tmdl/summary0602.pdf> [as of May 20, 2021] (San Diego Creek and Newport Bay Toxics TMDL)

291 Santa Ana Regional Water Quality Control Board, Revised Organochlorine Compounds TMDLs for San Diego Creek, Upper and Lower Newport Bay (July 15, 2015),

<https://www.waterboards.ca.gov/rwqcb8/water_issues/programs/tmdl/docs/oc/2011-0037/FINAL/R8-2011-0037_Attachment2_Final_BPA.PDF> [as of May 20, 2021] (San Diego Creek and Newport Bay Toxics TMDL)

surface soils or in-stream sediments, primarily from San Diego Creek. Construction activities have the potential to exacerbate erosion within the watershed, therefore construction sites covered under this General Permit are considered Responsible Dischargers.

Chlorpyrifos, chromium, diazinon, dieldrin, mercury, and selenium are not translated for this General Permit as construction stormwater discharges are not identified as sources of these pollutants.

- Waste Load Allocation Translation

  The San Diego Creek and Newport Bay Toxics TMDL assigns waste load allocations for various metals (cadmium, copper, lead, and zinc) and organochlorine compounds (chlordane, DDT, PCBs, and toxaphene) to Responsible Dischargers to be met at the site's discharge location(s) for dischargers into Newport Bay or San Diego Creek and its tributaries. The following list details the water bodies and their associated pollutants with assigned waste load allocations:

  1) San Diego Creek: cadmium, copper, lead, zinc, DDT, and toxaphene

     The San Diego Creek and Newport Bay Toxics TMDL assigns concentration-based waste load allocations for cadmium, copper, lead, and zinc to the category "Other NPDES permittees" which includes Responsible Dischargers in addition to seven other NPDES permits. The TMDL does not specifically identify construction stormwater dischargers as a major source of metals to the impaired waterbodies or divide the waste load allocations between permitted dischargers. Furthermore, the TMDL includes an option for the Water Boards to conduct a permit-specific analysis to divide the waste load allocations; however, conducting the analysis on a discharge flow, volume, and timing basis is not aligned with the framework of this General Permit.

     The waste load allocations are assigned to Responsible Dischargers to be met at the construction site's discharge location(s) for discharges into San Diego Creek and its tributaries including the Santa Ana-Delhi Channel, Big Canyon Channel, East Costa Mesa Channel, and other tributaries into San Diego Creek (San Diego Creek Watershed). Therefore, these waste load allocations are translated as concentration-based numeric action levels applied at the point(s) of discharge from the Responsible Discharger's construction site. The waste load allocations are hardness dependent, meaning the receiving water body hardness must be known to calculate the waste load allocations.

Receiving water body hardness is dependent on receiving water body flow. The U.S. EPA calculated the hardness-dependent criteria for cadmium, copper, lead, and zinc as shown in Table 5-2 of the San Diego Toxics TMDL with the following CTR equation:

$$CMC = WER \times (Acute\ Conversion\ Factor) \times (\exp\{mA[\ln(hardness)]+bA\})$$

Where CMC stands for criterion maximum concentration, WER is the water effect ratio, and mA and bA are constants, specific to each metal. Hardness is defined as the concentration of calcium carbonate ($CaCO_3$) in the water column and has the units of milligram per liter (mg/L). Freshwater aquatic life criteria for certain metals are expressed as a function of hardness because hardness and/or water quality characteristics that are usually correlated with hardness can reduce or increase the toxicity of some metals. The site-specific hardness is used to calculate the metal numeric targets.

Only one hardness value is selected to be representative of the receiving water body instead of requiring Responsible Dischargers to sample for receiving water body hardness in concurrence with taking a discharge sample to calculate the metal criteria. This is consistent with the approach taken in many hardness-dependent TMDLs of assigning a hardness value based on existing data. The U.S. EPA and the Santa Ana Regional Water Quality Control Board staff evaluated daily flow records of the San Diego Creek for 19 years. The TMDL developed multiple receiving water hardness values based on flow and did not assign one hardness value to be representative of the San Diego Creek water body. A hardness of 197mg/L was calculated as the average hardness for large flows and is selected as the typical hardness value associated with a precipitation event flow at San Diego Creek. Table 5-2 of the San Diego Toxics TMDL shows how the California Toxics Rule (CTR) equation was used to calculate the acute concentration criteria at a hardness of 197 mg/L.

Table 74 – San Diego Creek Watershed Waste Load Allocation Translation

Parameter	CTR Equation	Total Criteria with 197 hardness in mg/L	Total freshwater acute concentration Numeric Action Level mg/L*
Cadmium	(exp(1.128*ln(hardness)-3.6867))	0.0097	0.0097
Copper	(exp(0.9422*ln(hardness)-1.7))	0.027	0.027
Lead	(exp(1.273*ln(hardness)-1.460))	0.194	0.194
Zinc	(exp(0.8473*ln(hardness)+0.884))	0.21	0.21

*Values are rounded to reflect the significant figures of each respective pollutant

An average hardness of San Diego Creek was selected to calculate the criteria for translating each pollutant into a numeric action level in the San Diego Toxics TMDL because it is not feasible or practical to require Responsible Dischargers to collect the ambient hardness of the receiving water body in concurrence with each monitoring sample.

The Revised Organochlorine Compounds TMDL assigns mass-based waste load allocations for total DDT and toxaphene on an annual basis to Responsible Dischargers in the San Diego Creek watershed, shown in Table 76 below. Requiring Responsible Dischargers to calculate the construction site's specific mass loading of a pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most organochlorine compound loadings in this watershed are in the form of fine sediment transported through erosion. The TMDL's implementation plan intends to use source control to reduce the loading of organochlorine compounds into the watershed, which is aligned with the requirements of this General Permit. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment controls, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

2) Upper Newport Bay: cadmium, copper, lead, zinc, chlordane, DDT, and PCBs

Mass-based waste load allocations for dissolved cadmium, copper, lead, and zinc are assigned to be met in the receiving water of Upper Newport Bay. Concentration-based waste load allocations for cadmium, copper, lead, and zinc in Upper Newport Bay are assigned to Other NPDES Dischargers, which includes construction stormwater dischargers. However, the TMDL does not specifically identify construction stormwater dischargers as a major source of metals to the impaired waterbodies or divide the waste load allocations between permitted dischargers. The TMDL includes an option for the Water Boards to conduct a permit-specific analysis to dive the waste load allocations; however, conducting the analysis on a discharge flow, volume, and timing basis is not aligned with the framework of this General Permit. Therefore, these waste load allocations are translated as concentration-based numeric action levels applied to the point(s) of discharge from the Responsible Discharger's construction site. The concentration-based waste load allocations are translated into total concentrations using the CTR conversion factor for saltwater acute criteria. The numeric action levels are shown in Table 75 below.

The Revised Organochlorine Compounds TMDL assigns mass-based waste load allocations for chlordane, DDT, and PCBs on an annual basis to Responsible Dischargers in Upper Newport Bay, shown in Table 76 below. Requiring Responsible Dischargers to calculate the construction site's specific mass loading of a pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most organochlorine compound loadings in this watershed are in the form of fine sediment transported through erosion. The TMDL's implementation plan intends to use source control to reduce the loading of organochlorine compounds into the watershed, which is aligned with the requirements of this General Permit. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment controls, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

3) Lower Newport Bay: copper, lead, zinc, chlordane, DDT, and PCBs

Mass-based waste load allocations for dissolved copper, lead, and zinc are assigned to be met in the receiving water of Lower Newport Bay. Concentration-based waste load allocations for copper, lead, and zinc in Lower Newport Bay are assigned to Other NPDES Dischargers, which includes construction stormwater dischargers. However, the TMDL does not specifically identify construction stormwater dischargers as a major source of metals to the impaired waterbodies or divide the waste load allocations between permitted dischargers. The TMDL includes an option for the Water Boards to conduct a permit-specific analysis to dive the waste load allocations; however, conducting the analysis on a discharge flow, volume, and timing basis is not aligned with the framework of this General Permit. Therefore, these waste load allocations are translated as concentration-based numeric action levels applied to the point(s) of discharge from the Responsible Discharger's construction site. The concentration-based waste load allocations are translated into total concentrations using the CTR conversion factor for saltwater acute criteria. The numeric action levels are shown in Table 75 below.

The Revised Organochlorine Compounds TMDL assigns mass-based waste load allocations for chlordane, DDT, and PCBs on an annual basis to Responsible Dischargers in Lower Newport Bay, shown in Table 76 below. Requiring Responsible Dischargers to calculate the construction site's specific mass loading of a pollutant(s) would be impractical, costly, and not aligned with the requirements of this General Permit. However, as mentioned in the source analysis, most organochlorine compound loadings in this watershed are in the form of fine sediment transported through erosion. The TMDL's implementation plan intends to use source control to reduce the loading of organochlorine compounds into the watershed, which is aligned with the requirements of this General Permit. Therefore, the following will address this TMDL:

a) Comply with the site-specific erosion and sediment controls, and post-construction requirements in this General Permit.

b) For each phase of the construction project, install erosion controls that will result in predicted erosion rates that are as protective as pre-construction (e.g., undisturbed vegetation for the area) conditions. Calculate the predicted erosion rates by using RUSLE2 modeling as described in Attachment H.

4) Rhine Channel Area of Lower Newport Bay: copper, lead, and zinc

Mass-based waste load allocations for dissolved, copper, lead, and zinc are assigned to be met in the receiving water of the Rhine Channel. Concentration-based waste load allocations for copper, lead, and zinc in Lower Newport Bay are assigned to Other NPDES Dischargers, which includes construction stormwater dischargers. However, the TMDL does not specifically identify construction stormwater dischargers as a major source of metals to the impaired waterbodies or divide the waste load allocations between permitted dischargers. The TMDL includes an option for the Water Boards to conduct a permit-specific analysis to dive the waste load allocations; however, conducting the analysis on a discharge flow, volume, and timing basis is not aligned with the framework of this General Permit. Therefore, these waste load allocations are translated as concentration-based numeric action levels applied to the point(s) of discharge from the Responsible Discharger's construction site. The concentration-based waste load allocations are translated into total concentrations using the CTR conversion factor for saltwater acute criteria. The numeric action levels are shown in Table 75 below.

Table 75 – Upper Newport Bay, Lower Newport Bay and Bay Segments, and Rhine Channel Metals Waste Load Allocation Translation

Parameter	Dissolved saltwater acute TMDLs and allocations (ug/L)	CTR Conversion Factor for saltwater acute criteria	Total saltwater acute concentration Numeric Action Level (mg/L)
Cadmium*	42	0.994	0.042**
Copper	4.8	0.83	0.00578**
Lead	210	0.951	0.221**
Zinc	90	0.946	0.095**

*Applies to Upper Newport Bay only
**Values are rounded to reflect the significant figures of each respective pollutant

Table 76 – San Diego Creek, Upper Newport Bay and Lower Newport Bay Organochlorine Compounds Waste Load Allocations

Parameter	Total DDT (g/yr)	Chlordane (g/yr)	Total PCBs (g/yr)	Toxaphene (g/yr)
San Diego Creek	99.8			1.5
Upper Newport Bay	40.3	23.4	23.2	
Lower Newport Bay	14.9	8.6	60.7	

- Compliance Actions and Schedule

  1) Metals

     Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that discharge into San Diego Creek, Upper Newport Bay, Lower Newport Bay, or the Rhine Channel and that identify on-site sources of cadmium, copper, lead, and zinc through the required pollutant source assessment, shall compare all non-visible sampling and analytical results to the applicable numeric action levels for the identified metals.

     If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric action levels in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to the metals' sources are expected to meet the numeric action levels.

     The Santa Ana Regional Water Quality Control Board has not adopted an Implementation Plan or a compliance schedule for the metals addressed by the San Diego Creek and Newport Bay Toxics TMDL. Therefore, Responsible Dischargers are required to achieve compliance with the translated numeric action levels by the effective date of this General Permit.

  2) Organochlorine Compounds

     Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that identify on-site sources of organochlorine compounds associated with the impaired water body, through the required pollutant source assessment, are to implement BMPs specific to preventing or controlling stormwater exposure to the organochlorine compounds. Furthermore, Responsible Dischargers are to comply with the RUSLE2 modeling requirements in Attachment H, Section I.G.2.

     The Revised Organochlorine Compounds TMDL's final compliance deadline for the TMDLs is December 31, 2020. Therefore, Responsible Dischargers shall comply with the requirements of this General Permit and the RUSLE2 modeling requirements in Attachment H, Section I.G.2, upon the effective date of this General Permit.

xvi. Chollas Creek Metals TMDL[292]

The San Diego Regional Water Quality Control Board adopted the Chollas Creek Metals TMDL on June 13, 2007, to address the impairment of Chollas Creek due to dissolved copper, lead, and zinc.

- Source Analysis

  The major urban runoff contributors of copper, lead, and zinc into Chollas Creek include freeways, commercial, and industrial land uses.[293] Construction erosion is a potential source of metals in Chollas Creek.[294] Sediment is assumed to not reside in Chollas Creek long enough to allow metal concentrations to build to high enough levels that the sediment becomes a source to the creek.[295] However, construction sites covered under this General Permit are identified as Responsible Dischargers for the Chollas Creek Metals TMDL.

- Waste Load Allocation Translation

  The Chollas Creek Metals TMDL assigns waste load allocations for dissolved copper, lead, and zinc to Responsible Dischargers to be met at the construction discharge location(s).

  The waste load allocations for dissolved copper, lead, and zinc are concentration-based and set equal to 90 percent of the numeric targets, which is the CTR acute criteria, shown in Table 77 below.

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292 San Diego Regional Water Quality Control Board, A Resolution Adopting an Amendment to the Water Quality Control Plan for the San Diego Basin (9) to Incorporate Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay, and to Revise the Toxic Pollutants Section of Chapter 3 to Reference the California Toxics Rule (June 2007) <https://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/docs/cholascreekmetals/update011509/R9-2007-0043_Signed.pdf> [as of May 20, 2021] (Chollas Creek Metals TMDL)

293 Chollas Creek Metals TMDL, p. 3.

294 San Diego Regional Water Quality Control Board, Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay (May 2007) <https://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/docs/cholascreekmetals/update011509/Technical_Report.pdf> [as of May 20, 2021] (Chollas Creek Metals TMDL Technical Report)

295 Chollas Creek Metals TMDL Technical Report, p. 49-50.

Table 77 – Chollas Creek Metals Waste Load Allocations

Pollutant	90 Percent of Dissolved Metal Concentration Numeric Targets (ug/L)
Dissolved Copper	(0.90) X (0.96) X exp(0.9422 X ln[hardness] – 1.700) X WER
Dissolved Lead	(0.90) X [1.46203 – 0.145712 X ln(hardness)] X exp(1.273 X ln[hardness] – 1.460) X WER
Dissolved Zinc	(0.90) X (0.978) X exp(0.8473 X ln[hardness] + 0.884) X WER

The CTR acute criteria for dissolved copper, lead, and zinc are calculated using water effect ratios (WER), which represents the correlation between the concentrations present in the water column and the concentrations that are biologically available and toxic to aquatic life. The San Diego Regional Water Board adopted Resolution R9-2017-0015 which established site-specific WERs for dissolved copper (6.998) and zinc (1.711) in Chollas Creek. In the absence of a site-specific WER, such as for lead, a default value of 1.0 is used.

The CTR acute criteria calculation also requires receiving water body hardness, which results in a floating target that would differ at each sample because the receiving water body hardness is dependent on receiving water body flow. Hardness is defined as the concentration of calcium carbonate (CaCO3) in the water column and has the units of milligram per liter (mg/L). Freshwater aquatic life criteria for certain metals are expressed as a function of hardness because hardness and/or water quality characteristics that are usually correlated with hardness can reduce or increase the toxicities of some metals.

Known site-specific hardness data is used to calculate the waste load allocation instead of requiring Responsible Dischargers to calculate their metal limit by sampling the receiving water body hardness in concurrence with taking a discharge sample. This is consistent with the approach taken in many hardness dependent TMDLs of assigning a hardness value based on existing data. Hardness data for Chollas Creek was obtained by Regional Board TMDL staff from California Integrated Water Quality System (CIWQS). Data analysis was conducted on hardness results from wet-weather sampling events from the Chollas Creek TMDL watershed with sample dates ranging from 1994 to 2017. All results obtained were marked as part of the Chollas Creek TMDL project, however not all stations had specific location information. Statistics run on the data set produced a hardness geometric mean of 94.07 mg/L. Table 78 below shows how the CTR equation was used to calculate the acute concentration criteria at a hardness of 94.07 mg/L.

Table 78 – Chollas Creek Dissolved Metals Waste Load Allocation Translation

Pollutant	CTR equation	Total Criteria (ug/L) using hardness of 94.07 mg/L	90 Percent of Total Criteria as the Waste Load Allocation (ug/L)	Translated Numeric Effluent Limitations (mg/L)*
Copper	6.998 X (exp(0.9422 X ln[hardness] - 1.7))	92.4823777	83.23413993	0.083
Lead	1 X (exp(1.273 X ln[hardness] - 1.460))	75.5324136	67.97917227	0.068
Zinc	1.711 X (exp(0.8473 X ln[hardness] + 0.884))	194.6576544	175.181889	0.175

*Values are rounded to reflect the significant figures of each respective pollutant

A geometric mean hardness of Chollas Creek was selected to calculate the criteria for translating each pollutant into a numeric effluent limitation in the Chollas Creek Metals TMDL because it is not feasible or practical to require Responsible Dischargers to collect the ambient hardness of the receiving water body in concurrence with each monitoring sample. Therefore, Responsible Dischargers are assigned numeric effluent limitations for dissolved copper, lead, and zinc for discharges to Chollas Creek to be met at the construction site's discharge location(s).

- Compliance Actions and Schedule

  Responsible Dischargers shall comply with the requirements of this General Permit. Responsible Dischargers that discharge into Chollas Creek and that identify on-site sources of copper, lead, and zinc through the required pollutant source assessment, shall compare all non-visible sampling and analytical results to the applicable numeric effluent limitations for the identified metals.

  If an exceedance or failure of a BMP is observed, the Responsible Discharger shall evaluate the BMPs being used and identify and implement a strategy in the site's SWPPP to prevent potential exceedances of the numeric effluent limitations in the future. Responsible Dischargers that perform the required pollutant source assessment and implement BMPs specific to preventing or controlling stormwater exposure to the metals' sources are expected to meet the numeric effluent limitations.

  The Chollas Creek Metals TMDL's final compliance deadline is October 22, 2028. As an interim target, Responsible Dischargers shall apply the translated numeric effluent limitation values as numeric action levels up until the compliance date of October 22, 2028. Future reissuances of this General Permit may incorporate additional or revised compliance

requirements or interim targets to progress towards the required final compliance when a numeric effluent limitation applies.

ATTACHMENT A

ACRONYMS AND TERMS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

Acronym or Term	Definition
ASBS	Areas of Special Biological Significance
ASTM	American Society of Testing and Materials; Standard Test Method for Particle-Size Analysis of Soils
ATS	Active Treatment System
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
CBPELSG	California Board of Professional Engineers, Land Surveyors and Geologists
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGP	NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities
CIWQS	California Integrated Water Quality System
COI	Change of Information
CPESC	Certified Professional in Erosion and Sediment Control
CPSWQ	Certified Professional in Storm Water Quality
CSMP	Construction Site Monitoring Program
CTR	California Toxics Rule
CWA	Clean Water Act
CWC	California Water Code
DAR	Duly Authorized Representative
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DWQ	Division of Water Quality
ELAP	Environmental Laboratory Accreditation Program
ELG	Effluent Limitation Guidelines
JTU	Jackson Turbidity Units
LID	Low Impact Development
LOEC	Lowest Observed Effect Concentration
LRP	Legally Responsible Person

LUP	Linear Underground and Overhead Projects
MATC	Maximum Allowable Threshold Concentration
MDL	Method Detection Limit
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NAL	Numeric Action Level
NEL	Numeric Effluent Limitation
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observed Effect Concentration
NOI	Notice of Intent
NONA	Notice of Non-Applicability
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTR	National Toxics Rule
NTU	Nephelometric Turbidity Units
O&M	Operation and Maintenance
OC	Organochlorine
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
POTW	Publicly Owned Treatment Works
PRD	Permit Registration Document
Previous Permit	State Water Board Order 2009-009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ
QA/QC	Quality Assurance and Quality Control
QAPrP	Quality Assurance Program Plan
QSD	Qualified SWPPP Developer
QSP	Qualified SWPPP Practitioner
Regional Water Board	Regional Water Quality Control Board
RUSLE	Revised Universal Soil Loss Equation
RUSLE2	Revised Universal Soil Loss Equation 2
SMARTS	Stormwater Multiple Application and Report Tracking System
State Water Board	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program
SWMM	Storm Water Management Model
SWPPP	Storm Water Pollution Prevention Plan
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USC	United States Code
U.S. EPA	United States Environmental Protection Agency
USGS	United States Geological Survey

Water Boards	Collectively, the State Water Resources Control Board and the Regional Water Quality Control Boards
WDID	Waste Discharge Identification Number
WLA	Waste Load Allocation
WER	Water Effect Ratio
WET	Whole Effluent Toxicity
WQO	Water Quality Objective
WQS	Water Quality Standard

ATTACHMENT B

GLOSSARY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

70 Percent Final Cover
For final construction site stabilization, 70 percent final cover is the permanent vegetative cover that is evenly established over 70 percent of all disturbed and exposed areas of soil (non-paved or non-built). In areas that naturally have low vegetative coverage (e.g., deserts), 70 percent of natural conditions is acceptable.

Active Areas of Construction
Active areas of construction are all areas subject to land surface disturbance activities related to the project including, but not limited to, project staging areas, immediate access areas and storage areas. All previously active areas of construction are considered active areas (unless temporarily defined as inactive areas) until final stabilization is complete.

Active Treatment System
An active treatment system is a treatment technology that employs chemical coagulation, chemical flocculation, or electrocoagulation to reduce turbidity caused by fine suspended sediment, and/or to control pH levels. An active treatment system relies on enclosed computerized systems with pumps, filters, and real-time controls.

Acute Toxicity
Acute toxicity in water is caused by chemical stimuli that rapidly induce a negative effect on aquatic life; in aquatic toxicity tests, acute toxicity is demonstrated by an effect observed within 96 hours or less.

Aerial Deposition
Aerial deposition is the deposition of airborne particulates from construction activities or nearby activities that settle onto surfaces. Such particulates can include, but are not limited to, metals, nutrients, organics, sediment, and trash.

Ancillary Facility
An ancillary facility is a support area required for construction activities of the linear underground and overhead project permitted area. The ancillary facility may be located adjacent to or within the linear underground and overhead project alignment (i.e., transmission/distribution right-of-way) or may be regionally located away from the linear underground and overhead project alignment. Ancillary areas include, but are not limited to, new access roads, helicopter landing zones, laydown yards, staging areas, substations, valve stations, etc.

Best Available Technology Economically Achievable (BAT)
As defined by U.S. EPA, BAT is a technology-based standard established by the Clean Water Act (CWA) § 304(b)(2) as the most appropriate means available on a national basis for controlling the direct discharge of toxic and nonconventional pollutants to navigable waters. The BAT effluent limitations guidelines, in general, represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

Best Conventional Pollutant Control Technology (BCT)
As defined by U.S. EPA, BCT is a technology-based standard established by the Clean Water Act (CWA) § 304(b)(4) for the discharge from existing industrial point sources of conventional pollutants including biochemical oxygen demand (BOD), total suspended sediment (TSS), fecal coliform, pH, and oil and grease.[1]

Best Management Practices (BMPs)
BMPs are management practices and structural controls used to prevent or reduce the discharge of pollutants from runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage to waters of the United States. BMPs include scheduling of activities, prohibitions of practices, operation and maintenance procedures, treatment, and vegetated infiltration basins amongst other practices.

Best Professional Judgment
Best professional judgement is a method used by permit writers to develop technology-based NPDES permit conditions on a case-by-case basis using all reasonably available and relevant data to establish technology-based limits or to determine other appropriate means to control its discharge (U.S. EPA NPDES Permit Writer's Manual 2010).

Chain of Custody Form
The Chain of Custody form is used to track sample handling as samples progress from sample collection to the analytical laboratory. The Chain of Custody form is then used to track the resulting analytical data from the laboratory to the client. Chain of Custody forms can be obtained from an analytical laboratory upon request.

Coagulation
Coagulation is the clumping of particles in a discharge to settle out impurities, often induced by chemicals such as lime, alum, and iron salts.

Common Plan of Development or Sale
A common plan of development or sale is a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one common plan. The "common plan" of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot

[1] U.S. EPA. Learn about Effluent Guidelines. Web. <https://www.epa.gov/eg/learn-about-effluent-guidelines#BCT> [as of October 19, 2020]

stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot. However, broad planning documents, such as land use master plans, conceptual master plans, or broad-based California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA) documents that identify potential projects for an agency or facility are not considered common plans of development. For construction projects within a larger common plan of development or sale located at least one-quarter mile apart and the area between the projects is not being disturbed, each individual project may be regulated as a separate construction project if land for interconnecting road, pipeline, or utilities that is part of the same common plan is not concurrently being disturbed.

Construction Site Monitoring Program
Construction site monitoring program is a description of methods and procedures for monitoring discharges at a construction site.

Conveyance System
Conveyance system is a sewer, ditch, pipe, hose, swale, or any engineered feature that is designed to convey water or any combination of such components.

Debris
Debris is litter, rubble, discarded refuse, or remains of destroyed inorganic anthropogenic waste.

Demolition and Pre-Development Site Preparation
Demolition and pre-development site preparation is a construction stage including demolition of existing structures that expose soil, rough grading and/or disking, clearing and grubbing operations, or any soil disturbance prior to mass grading.

Detected Not Quantifiable
Detected not quantifiable is a sample result that is between the method detection limit and the minimum level or reporting limit.

Detention
Detention is the temporary storage of stormwater to improve quality or reduce the volumetric flow rate of discharge or both.

Dewatering
Dewatering is the process of removing excess water in an excavation or impoundment by pumping or other mechanical means.

Discharge Location
Discharge location is a common outlet from a construction site drainage area where stormwater, authorized non-stormwater, or dewatering discharge leaves the site or project boundary, or enters any on-site waters of the United States (e.g., a creek running through a site).

Discharger
The discharger is a person as defined in Water Code, § 13050(c), which includes companies and governmental bodies, subject to this General Permit. The discharger is responsible for compliance with this Permit, including work done by QSDs, QSPs, and QSP delegates. The following persons may serve as the discharger:

1. A person, company, agency, or other entity that possesses a real property interest (including, but not limited to, fee simple ownership, easement, leasehold, or other rights of way) in the land upon which the construction or land disturbance activities will occur for the regulated site.

2. For linear underground and overhead projects, the utility company, municipality, or other public or private company or agency that owns or operates the linear underground or overhead project.

3. For land controlled by an estate or similar entity, the person who has day-to-day control over the land (including, but not limited to, a bankruptcy trustee, receiver, or conservator).

4. For pollution investigation and remediation projects, any potentially responsible party that has received permission to conduct the project from the holder of a real property interest in the land.

5. For U.S. Army Corps of Engineers projects, the U.S. Army Corps of Engineers may provide written authorization to its bonded contractor to serve as the discharger, provided the U.S. Army Corps of Engineers is also responsible for compliance with the General Permit, as authorized by the Clean Water Act or the Federal Facilities Compliance Act.

6. For projects on public lands, a public agency with a real property interest in the land may provide written authorization via an encroachment permit to another public agency to serve as the discharger, provided that both public agencies remain responsible for compliance with this General Permit.

A contractor is qualified to be a discharger if the contractor satisfies one of the requirements above.

Dose Rate
In applied chemistry, dose rate is dose of a chemical per time unit (e.g., mg/day), sometimes also called dosage or injection rate.

Drainage Area
Drainage area is the area of land that drains water, sediment, pollutants, and dissolved materials to a common outlet or discharge location.

Duly Authorized Representative (DAR)
A Duly Authorized Representative is a named individual or position that has responsibility for the overall operation of the regulated construction project or activities

including, but not limited to, a superintendent, project manager, or other positions of equivalent or higher responsibility. Additionally, an individual or position that has overall responsibility for environmental matters for the owner or company may be designated as a Duly Authorized Representative. The Legally Responsible Person designates the Duly Authorized Representative through SMARTS, authorizing the Duly Authorized Representative to sign, certify, and electronically submit Permit Registration Documents, Notices of Termination, and any other supporting documents, reports, or information required by this General Permit, the State or Regional Water Boards, or U.S. EPA. A Duly Authorized Representative cannot be a contractor, consultant, or other third party.

Effective Date
An effective date is a date set by the State Water Resources Control Board (State Water Board) during the adoption of an Order, for the date that at least one or more of the Order provisions take effect and the previous Order is rescinded.

Effluent
Effluent is any discharge either to the receiving water or beyond the property boundary controlled by the discharger.

Effluent Limitation
An effluent limitation is any numeric or narrative restriction imposed on quantities, discharge rates, and concentrations of pollutants which are discharged from point sources into waters of the United States, the waters of the contiguous zone, or the ocean.

Erosion
Erosion is the process, by which soil particles are detached and transported by the actions of wind, water, or gravity.

Erosion Control BMPs
Erosion control BMPs is vegetation, such as grasses and wildflowers, and other materials, such as straw, fiber, stabilizing emulsion, protective blankets, rolled erosion control product, etc., placed to stabilize areas of disturbed soils, reduce loss of soil due to the action of water or wind, and prevent water pollution.

Field Measurements
Field measurements are results of testing procedures performed in the field with portable field-testing kits or meters.

Final Stabilization
Final stabilization is established when all soil disturbing activities at each individual parcel within the construction site have been completed, and the establishment of a permanent vegetative cover, or equivalent permanent stabilization measures (such as riprap, gabions, or geotextiles) to prevent erosion in a manner consistent with the requirements in this General Permit.

First Order Stream
A first order stream is a stream with no tributaries.

Flocculants
Flocculants are substances which promote the clumping of particles.

Forecasted Precipitation Event
Forecasted precipitation event is any weather pattern that is forecasted to have a 50 percent or greater chance of producing 0.5 inches of precipitation in a 24-hour period in the project area. The discharger shall obtain precipitation forecast information from the National Weather Service Forecast Office (e.g., by entering the zip code of the project's location at https://forecast.weather.gov). Precipitation events end when there are two sequential 24-hour periods with less than 0.25 inches of precipitation forecast for each period.

Full Capture System
A full capture system is a treatment control, or series of treatment controls, including but not limited to, a multi-benefit project or a low impact development control that traps all particles that are 5mm or greater, and has a design treatment capacity that is either:

1. Of not less than the peak flow rate, Q, resulting from a one-year, one-hour, storm in the subdrainage area; or

2. Appropriately sized to, and designed to, carry at least the same flows as the corresponding storm drain.

Full Capture System Equivalency
Full capture system equivalency is the trash load that would be reduced if full capture systems were installed, operated, and maintained for all storm drains that capture runoff from the relevant areas of land (e.g., facilities or sites regulated by NPDES permits for discharges of stormwater associated with industrial activity, including construction activity). The full capture system equivalency is a trash load reduction target that the permittee quantifies by using an approach, and technically acceptable and defensible assumptions and methods for applying the approach, subject to the approval of the permitting authority.

Good Housekeeping BMPs
Good housekeeping BMPs are designed to reduce or eliminate the addition of pollutants to construction site runoff through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

Grading and Land Development Phase
Grading and land development phase includes reconfiguring the topography and slope, including: alluvium removals; canyon cleanouts; rock undercuts; keyway excavations; landform grading; and stockpiling of select material for capping operations.

Groundwater
Groundwater is water that exists underground in saturated zones beneath the land surface.

Hydraulically Downgradient
Hydraulically downgradient is the direction of stream flow towards a lower elevation.

Hydromodification
Hydromodification is the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation.

Inactive Project
Inactive project is where all construction activities (including passive treatment technology, active treatment systems, and/or active equipment), are fully stabilized and will be suspended for 30 days or more.

Infeasible
Infeasible means that the discharger has demonstrated that the specific requirement is not technologically possible, or not economically practicable and achievable in light of best industry practices.

K Factor
The K factor is the soil erodibility factor used in the Revised Universal Soil Loss Equation (RUSLE). The K factor represents the combination of detachability of the soil, runoff potential of the soil, and the transportability of the sediment eroded from the soil.

Legally Responsible Person
The Legally Responsible Person is a representative of a permittee and signatory that is legally designated to sign, certify, and electronically submit any documents required by the General Permit, the State or Regional Water Board, or U.S. EPA. An LRP must be one of the following:

1. For a corporation or limited liability company: a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation or limited liability company; or (b) the manager of the facility if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

2. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

3. For a municipality, state, federal, or other public agency: a principal executive officer, ranking elected official, city manager, council president, or any other authorized

public employee with managerial responsibility over the construction or land disturbance project (including, but not limited to, project manager, project superintendent, or resident engineer);

4. For an individual: the individual; or

5. For any type of entity not listed above (e.g., trusts, estates, receivers): an authorized person with managerial authority over the construction or land disturbance project.

Maximum Allowable Threshold Concentration
Maximum allowable threshold concentration is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. Typically, the MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

Method Detection Limit
Method detection limit is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.

Minimum Level or Reporting Limit
Minimum level or reporting limit is the lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard in a method, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

Multi-Benefit Project
Multi-benefit project is a treatment control project designed to achieve the benefits set forth in California Water Code § 10562, subdivision (d). Examples include projects designed to: infiltrate, recharge, or store stormwater for beneficial reuse; develop or enhance habitat and open space through stormwater and non-stormwater management; and/or reduce stormwater and non-stormwater runoff volume.

Natural Channel Evolution
Natural channel evolution is the physical trend in channel adjustments following a disturbance that causes the river to have more energy and degrade or aggrade more sediment. Channels have been observed to pass through 5 to 9 evolution types. Once a channel passes though the suite of evolution stages, the channel will rest in a new state of equilibrium.

Non-Detect
Non-detect is a sample result represented by “ND” in which the concentration of the subject pollutant analyte is less than the method detection limit, and therefore not detectable by the laboratory method and/or equipment used.

Non-Stormwater Discharges
Non-stormwater discharges are discharges that do not originate from precipitation events. They can include, but are not limited to, discharges of process water, air conditioner condensate, non-contact cooling water, vehicle wash water, sanitary wastes, concrete washout water, paint wash water, irrigation water, dust control over-wetting, or pipe testing water.

Non-Stormwater Pollution Controls
Non-stormwater pollution controls are the general site and materials management measures that directly or indirectly aid in minimizing the non-stormwater originated discharge of sediment and other construction related pollutants from the construction site.

Non-Structural Controls
Non-structural controls are best management practices that do not involve a structured or engineered solution. Non-structural controls include measures including education, site planning, and stormwater management regulations**.**

Non-Visible Pollutants
Non-visible pollutants associated with a specific site or activity that can have a negative impact on water quality but cannot be seen though observation (e.g., chlorine).

Numeric Action Level
A numeric action level (e.g., a pH range, turbidity value, or concentration) is a level that triggers a required evaluation of the effectiveness of best management practices implemented on the subject construction site, and the required implementation of additional corrective actions necessary to reduce the subject pollutant below the numeric action level. The numeric action level compliance location applies to each sample location and/or corresponding discharge location.

Numeric Action Level Exceedance
Non-TMDL numeric action level exceedance: A numeric action level exceedance occurs when the field reading for the one sample taken during each day of a qualifying precipitation event at each sample and/or discharge location, exceeds an applicable numeric action level. A numeric action level exceedance is not a violation of this General Permit. A discharger failing to report and failing to modify implementation of its best management practices to prevent further numeric action level exceedance(s), is a violation of this General Permit.

TMDL-related numeric action level exceedance: A TMDL-related numeric action level exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the

same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in an applicable numeric action level. A numeric action level exceedance is not a violation of this General Permit; however, it is a violation when the discharger fails to report and respond to the numeric action level exceedance(s).

Numeric Effluent Limitation
Numeric effluent limitation is a technology-based or water quality-based limit (e.g., pH range, turbidity value, or concentration) established for discharges covered under this General Permit. The numeric effluent limitation compliance location(s) applies to each sample and/or discharge location at the point of discharge from an active treatment system if applicable.

Numeric Effluent Limitation Exceedance
Active treatment system numeric effluent limitation exceedance: An active treatment system numeric effluent limitation exceedance occurs when the analytical result for the samples taken during operation of an active treatment system exceeds an applicable numeric effluent limitation. A numeric effluent limitation exceedance is a violation of this General Permit and subject to mandatory minimum penalties.

TMDL-related numeric effluent limitation exceedance: A TMDL-related numeric effluent limitation exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in an applicable numeric effluent limitation. Each numeric effluent limitation exceedance after the first instance is a violation of this General Permit and subject to mandatory minimum penalties.

Passive Treatment
Passive treatment is the application of natural or synthetic chemicals and products to reduce turbidity in discharges through coagulation and flocculation. Passive treatment does not rely on computerized, enclosed systems with pumps, filters, and real-time controls. Passive treatment may include pumps where they are necessary to move water around the construction site.[2] Passive treatment products are available in a variety of forms and may be land-applied for soil stabilization (e.g., bonded fiber matrixes, hydromulches) or water-applied for sediment removal (e.g., liquid treatment chemicals, powders, slow-releasing solid blocks/socks).

Permanent Control Measures
Permanent control measures are the erosion prevention materials designed to provide long-term protection to underlying soils. This may include, but is not limited to buildings, paving a uniform (evenly distributed, without large bare areas) perennial vegetative cover, riprap, gabions, or biodegradable rolled erosion control products (RECP).

[2] U.S. EPA. 2017 Construction General Permit. Web. January 11, 2017. <https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents> [as of October 19, 2020]

pH
pH is the unit universally used to express the intensity of the acid or alkaline condition of a water sample. The pH of natural waters tends to range between 6 and 9, with neutral being 7. Extremes of pH can have deleterious effects on aquatic systems.

Post-Construction BMPs
Post-construction BMPs are structural and non-structural controls which detain, retain, infiltrate, and/or filter out pollutants discharged to receiving waters after a construction project is completed. Low impact development features are considered a type of post-construction BMP.

Precipitation Event
Precipitation event is any weather pattern that results in precipitation (rain, snow, sleet, or hail).

Programmatic Permitting
Programmatic permitting is an approach for linear underground and overhead project dischargers to obtain General Permit coverage for multiple non-contiguous sites with similar scope and construction activities, that are located within one Regional Water Board boundary and have the same Legally Responsible Person.

Project
Project is the area that includes sites where land is disturbed and also includes the areas of activities that do not disturb land.

Property Boundary
Property boundary or the area enclosed by the property lines. Property boundary includes project area and sites.

Qualified SWPPP Developer (QSD)
Qualified SWPPP developer is a qualified stormwater professional authorized by the discharger to develop and revise SWPPPs.

Qualified SWPPP Practitioner (QSP)
Qualified SWPPP practitioner is a qualified stormwater professional authorized by the discharger to conduct non-stormwater and stormwater visual observations, sampling, and implementation of all elements of the SWPPP.

Qualifying Precipitation Event
Qualifying precipitation event is any weather pattern that is forecast to have a 50 percent or greater Probability of Precipitation (PoP) and a Quantitative Precipitation Forecast (QPF) of 0.5 inches or more within a 24-hour period. The event begins with the 24-hour period when 0.5 inches has been forecast and continues on subsequent 24-hour periods when 0.25 inches of precipitation or more is forecast.

R Factor
R factor is the erosivity factor used in the Revised Universal Soil Loss Equation (RUSLE). The R factor represents the erosivity of the climate at a particular location. An average annual value of R is determined from historical weather records using erosivity values determined for individual storms. The erosivity of an individual storm is computed as the product of the storm's total energy, which is closely related to storm amount, and the storm's maximum 30-minute intensity.

Regional Water Quality Control Board (Regional Water Board)
A Regional Water Board is a semi-autonomous board comprised of board members appointed by the Governor and confirmed by the state Senate. California has nine Regional Water Boards with jurisdictions based on watersheds. A Regional Water Board may delegate its authority to the executive officer to the board, or other designated staff.

Remaining Sub-Sampled Material
Remaining sub-sampled material is the material (for example: organic material, gravel, etc.) that remains after the organisms to be identified have been removed from the subsample for identification. (Generally, no macroinvertebrates are present in the remaining subsampled material, but the sample needs to be checked and verified using a complete Quality Assurance (QA) plan).

Reporting Period
A reporting period is a specified period of time in which pertinent report information is applicable. For example, a standard reporting period in this Order is July 1 through June 30 of each year.

Responsible Discharger
Responsible dischargers are dischargers who:

1. Discharge stormwater and authorized non-stormwater directly, or through a municipal separate sewer system (MS4) or other conveyance, to impaired water bodies or watersheds identified in a U.S. EPA-approved TMDL with a waste load allocation assigned to construction stormwater sources; and

2. Have identified, through the site-specific pollutant source assessment, that one or more pollutants specific to the TMDL are present on-site with the potential to enter construction stormwater discharges.

Revised Universal Soil Loss Equation (RUSLE)
Revised universal soil loss equation is the empirical model that calculates average annual soil loss as a function of rainfall and runoff erosivity, soil erodibility, topography, erosion controls, and sediment controls.

Revised Universal Soil Loss Equation 2 (RUSLE2)
Revised universal soil loss equation 2 is the updated Windows®-based empirical model that calculates average annual soil loss as a function of rainfall and runoff erosivity, soil

erodibility, topography, erosion controls, and sediment controls. This includes subsequent equivalent versions of this model.

Routine Maintenance
Routine maintenance are activities intended to maintain the original line and grade, hydraulic capacity, and/or original purpose of a facility. The Order further defines routine maintenance (Section II.B.1) for road and highway projects as the replacement of the structural section, but not when the activity exposes the underlying soil or erodible subgrade. The road surface and base are not part of the subgrade. As such, those portions of a project that remove the paved road surface and base down to the erodible subgrade and/or underlying soil would not be considered routine maintenance.

Runoff Control BMPs
Runoff control BMPs are designed to control the peak volume and flow rate, or prevent scour due to concentrated flows.

Run-on
Run-on are discharges that originate offsite and flow onto the property of a separate project site.

Sampling Location
Sampling location for traditional construction projects: An identified discharge location where samples of stormwater, non-stormwater, or dewatering discharges are obtained to determine compliance with requirements in this General Permit.

Sampling location for linear underground and overhead projects: An identified discharge location, representative of the project's construction activities, where samples of stormwater, non-stormwater, or dewatering discharges are obtained to determine compliance with requirements in this General Permit.

Secondary Containment
Secondary containment is a device or control measure in addition to the primary containment that is used to stop a discharge of pollutants or hazardous material from leaving a specified area.

Sediment
Sediment is solid particulate matter, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Sediment Control BMPs
Sediment control BMPs are practices and controls that trap soil particles after erosion by rain, flowing water, or wind. They include those practices that intercept and slow or detain the flow of stormwater to allow sediment to settle and be trapped (e.g., silt fence, sediment basin, fiber rolls, etc.).

Sedimentation
Sedimentation is the process of deposition of suspended matter carried by water, wastewater, or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material.

Sensitive Watershed
Sensitive watershed is a watershed draining into a receiving water body listed on the State Water Board's approved CWA 303(d) list for sedimentation/siltation, turbidity, or a water body designated with beneficial uses of cold, spawn, and migratory.

Settleable Solids
Settleable solids is a solid material that can be settled within a water column during a specified time frame. It is typically tested by placing a water sample into an Imhoff settling cone and then allowing the solids to settle by gravity for a given length of time. Results are reported either as a volume of milliliter per liter (mL/L) or as a concentration (milligrams per liter (mg/L)).

Sheet Flow
Sheet flow is overland flow of water that occurs in areas where there are no defined channels where the water spreads out over a large area at a uniform depth.

Site
A site is the area disturbed where the construction activity is physically located or conducted, including staging, storage, and access areas.

Site Operating Hours
Site operating hours are the time periods when the site is staffed to conduct any function related to the construction activity.

Soil Amendment
A soil amendment is any material that is added to the soil to change its chemical properties, engineering properties, or erosion resistance that could become mobilized by stormwater.

Source
Source is any construction activity, material, or area that causes or contributes to pollutants in stormwater.

Stormwater
Stormwater is rain, snowmelt, or any other liquid or solid precipitation that may result in runoff, and drainage from a site.

Streets and Utilities Phase
Streets and utilities phase is the construction stage including excavation and street paving, lot grading, curbs, gutters and sidewalks, public utilities, public water facilities including fire hydrants, public sanitary sewer systems, storm sewer system, and/or other drainage improvements.

Structural Controls
Structural controls are any structural facility or fabrication designed and constructed to mitigate the adverse impacts of stormwater and urban runoff pollution.

Surface Runoff
Surface runoff is the portion of stormwater that does not infiltrate into the ground or evaporate, but instead flows overland onto adjacent land or watercourses or is routed to stormwater conveyance systems.

Topsoil
Topsoil is the uppermost part of the soil profile, which is the most favorable material for plant growth. It is typically rich in organic matter.

Total Maximum Daily Load (TMDL)
A TMDL is the sum of the maximum amount of a pollutant that a waterbody can receive per day and still meet state water quality standards. It is the sum of the individual Waste Load Allocations (WLAs) for point sources, the load allocations for nonpoint and natural background sources, and the margin of safety.

Total Suspended Solids (TSS)
The measure of total suspended solids is the measure of the suspended solids in a water sample which includes inorganic substances, such as soil particles and organic substances, such as algae, aquatic plant/animal waste, particles related to industrial/sewage waste, etc. The TSS test measures the concentration of suspended solids in water by measuring the dry weight of a solid material contained in a known volume of a sub-sample of a collected water sample. Results are reported in mg/L.

Toxicity
Toxicity is the adverse response(s) of organisms to chemicals or physical agents ranging from mortality to physiological responses such as impaired reproduction or growth anomalies.

Trash
Trash is all improperly discarded solid material from any production, manufacturing, or processing operation including, but not limited to, products, product packaging, or containers constructed of plastic, steel, aluminum, glass, paper, or other synthetic or natural materials.

Tributary
Tributary is a smaller river or stream that flows into a larger river or stream.

Turbidity
Turbidity is the optical condition and cloudiness of water caused by suspended or dissolved particles or colloids. Turbidity is quantified by the degree to which light traveling through a water column is scattered by the suspended organic and inorganic particles it contains. The turbidity test is reported in Nephelometric Turbidity Units (NTU) or Jackson Turbidity Units (JTU) with a calibrated turbidity meter.

Vertical Construction Phase
Vertical construction phase is the build out of structures from foundations to roofing, including rough landscaping.

Waste Load Allocation (WLA)
Waste load allocation is the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution.

Water Effect Ratio (WER)
Water effect ratio is a factor that can be used per U.S. EPA water quality criteria (WQC) regulations, to customize national aquatic life criteria to reflect site-specific water column conditions. The WER is used to derive site-specific criteria that maintain the level of protection of aquatic life intended by the "Guidelines for deriving numerical national WQC" (U.S. EPA 1985).

Waters of the United States
Waters of the United States is defined by the federal Environmental Protection Agency in 40 Code of Federal Regulations § 122.2.

Water Quality Objectives (WQO)
Water quality objectives are defined in the California Water Code as limits or levels of water quality constituents or characteristics, which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

Water Quality Standards
Water quality standards consists of beneficial uses, water quality objectives to protect those uses, an antidegradation policy, and policies for implementation. Water quality standards are established in Regional Water Quality Control Plans (Basin Plans) and statewide Water Quality Control Plans. U.S. EPA has also adopted water quality criteria (the same as objectives) for California in the National Toxics Rule and California Toxics Rule.

ATTACHMENT C

CONTACTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCAITED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

State Water Resources Control Board
www.waterboards.ca.gov
P.O. Box 1977
Sacramento, CA 95812-1977
stormwater@waterboards.ca.gov

Division of Financial Assistance: (916) 341-5700
Division of Water Quality: (916) 341-5455
Office of Enforcement: (916) 341-5272
Office of Public Affairs: (916) 341-5254
Office of Legislative Affairs: (916) 341-5251
Office of the Ombudsman: (916) 341-5254



CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

ATTACHMENT C

Regional Water Quality Control Board Stormwater Program Contacts

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(619) 516-1990

CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

STORMWATER STAFF DIRECTORY
https://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.html

ATTACHMENT D

TRADITIONAL CONSTRUCTION RISK LEVEL REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

I. GENERAL REQUIREMENTS

Risk Level 1, 2, and 3 dischargers shall implement the following minimum best management practices (BMPs) to reduce or prevent pollutants in construction stormwater discharges, monitoring requirements, and reporting requirements. If a requirement in this attachment does not specify a specific Risk Level, then the requirement applies to Risk Level 1, 2, and 3 dischargers.

II. MINIMUM BEST MANAGEMENT PRACTICES

II.A. Good Site Management "Housekeeping"

II.A.1. Dischargers shall implement good site management (i.e., "housekeeping") measures for construction materials that could potentially be a threat to water quality if discharged or exposed to stormwater. At a minimum, dischargers shall implement the following good housekeeping measures:

a. Identify and protect the products used and/or expected to be used and the end products that are produced and/or expected to be produced from exposure to stormwater. Products do not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (e.g., poles, equipment pads, cabinets, conductors, insulators, bricks, roofing, and siding);

b. Apply BMPs to erodible stockpiled construction materials (e.g., soil, spoils, fly-ash, stucco, hydrated lime) to prevent erosion and pollutant transport;

c. Store chemicals in watertight containers with secondary containment to prevent any spillage or leakage or store in a completely enclosed storage area;

d. Minimize exposure of construction materials to precipitation. Construction materials do not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (e.g., poles, equipment pads, cabinets, conductors, insulators, bricks);

e. Implement BMPs to control the off-site tracking of sediment and loose construction and landscape materials; and

f. Implement BMPs to control the discharge of plastic materials and limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Dischargers shall consider the use of plastic materials resistant to solar degradation where plastic materials are deemed necessary.

II.A.2. Dischargers shall implement good housekeeping measures for waste management, which, at a minimum, shall consist of the following:

a. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, masonry wash waters, and other wash waters. Wash waters shall be captured and treated prior to discharge, or disposed of at a permitted facility that can accept that waste, to mitigate impacts to water quality;

b. Provide containment (e.g., secondary containment) of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the stormwater drainage system or receiving water;

c. Clean or replace sanitation facilities and inspect them regularly for leaks and spills;

d. Keep debris or trash in waste containers if it is subject to transport from the site by wind or runoff;

e. Cover waste disposal containers at the end of every business day and during a precipitation event;

f. Prevent discharges from waste disposal containers to the stormwater drainage system or receiving water (e.g., containers with solid bottoms and regular maintenance);

g. Contain and securely protect stockpiled waste material from wind and precipitation unless actively being used; and

h. Secure and contain concrete washout areas and other washout areas that may contain additional pollutants to minimize discharge into the underlying soil and onto surrounding areas. Washout areas shall be covered prior to and during a precipitation event.

II.A.3. Dischargers shall implement good housekeeping for vehicle/equipment storage and maintenance, which shall consist of the following:

a. Contain fuel, grease, and oil to prevent them from leaking into ground, storm drains, or surface waters;

b. Place all equipment or vehicles, which are to be fueled, maintained, and/or stored in a designated area with BMPs installed; and

c. Clean leaks immediately and dispose of leaked materials properly in accordance with the law.

II.A.4. Dischargers shall implement good housekeeping for landscape materials, which shall consist of the following:

a. Contain and protect stockpiled materials such as mulches and topsoil, or other erodible landscape materials, from wind and precipitation unless being actively used;

b. Contain packaged landscape materials (e.g., fertilizers) when they are not being actively used;

c. Discontinue the application of any erodible landscape material at least 2 days before a forecasted precipitation event as defined in Attachment B or during periods of precipitation; and

d. Apply erodible landscape material at quantities and rates in accordance with manufacturer recommendations or based on written specifications by knowledgeable and experienced field personnel;

II.A.5. Dischargers shall implement good housekeeping measures on the construction site to control the aerial deposition of site materials and from site operations. Such particulates can include, but are not limited to, metals, nutrients, organics, sediment, other particulates, and trash.

II.A.6. Dischargers shall document all housekeeping BMPs in the SWPPP that correspond to the nature and phase of the construction activities. Construction phases at traditional land development projects include demolition and pre-development site preparation phase, grading and land development phase, streets and utilities phase, vertical construction phase, and final landscaping and site stabilization phase.

II.B. Non-Stormwater Management

II.B.1. Dischargers shall implement the following measures to control all non-stormwater discharges during construction:

a. Wash vehicles in such a manner as to prevent non-stormwater discharges to surface waters or municipal separate sewer system drainage systems;

b. Clean streets in such a manner as to prevent unauthorized non-stormwater discharges from reaching surface water or municipal separate sewer system drainage systems; and

c. Eliminate any non-stormwater discharges not authorized in Section IV.A of this General Permit's Order.

II.C. Preserve Existing Topsoil

II.C.1. Dischargers shall preserve existing topsoil, unless infeasible, through the following practices:

a. Stockpiling existing topsoil, or transferring topsoil to other locations, to deploy and reestablish vegetation prior to termination of coverage; and

b. Stabilizing disturbed topsoil during construction.

Preserving existing topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.[1]

1 Examples may include the removal of topsoil containing invasive seedbanks, lack of space to stockpile topsoil, and sites that are designed to be highly impervious after construction with little to no vegetation intended to remain.

II.D. Erosion Control

II.D.1. Dischargers shall implement the following practices to eliminate or minimize site erosion. Erosion control BMPs (except for sprayed products) shall be available on-site or at a nearby location (e.g., common lay-down yard), year-round with trained persons able to deploy the product under the direction of the Qualified SWPPP Practitioner:

a. Implement effective wind erosion control;

b. Preserve existing vegetation;

c. Minimize the amount of soil exposed during construction activity;

d. Minimize the disturbance of steep slopes;

e. Schedule earthwork to minimize the amount of disturbed area when feasible;

f. Immediately initiate stabilization for disturbed areas whenever earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days;[2]

g. Minimize soil compaction in areas other than where the intended function of a specific area dictates that it be compacted;

h. Reestablish vegetation or non-vegetative erosion controls as soon as practicable;

i. If feasible, divert up gradient run-on water from contacting areas of exposed soils disturbed by construction activities or convey run-on through the site in a manner that prevents erosion from areas of construction and does not compromise the effectiveness of erosion, sediment, and perimeter controls;

j. Run-on water flowing onto a site from off-site areas may be separated from a site's stormwater discharge to eliminate commingled contribution. Run-on diversion shall occur prior to entering an area affected by construction activity. Run-on flow diversion shall be conveyed through or around the construction activity in plastic pipe or an engineered conveyance channel in a manner that will not cause erosion due to flow diversion. Run-on combined with a site's stormwater discharge is considered a stormwater discharge.

k. Limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Where plastic materials are deemed necessary, the

2 In arid, semiarid, and drought-stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative stabilization measures shall be employed as specified by the Regional Water Board. Stabilization shall be completed within a period of time determined by the Regional Water Board. In limited circumstances stabilization may not be required if the intended function of a specific area of the site necessitates that it remains disturbed.

discharger shall consider the use of plastic materials resistant to solar degradation;

l. Control stormwater and non-stormwater discharges to minimize downstream channel and bank erosion; and

m. Control peak flowrates and total volume of stormwater and authorized non-stormwater discharges to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.

II.D.2. Dischargers that stabilize soil using bonded-fiber matrices, hydromulches, spray tackifiers, or other land-applied products shall:

a. Apply the product according to the manufacturer's instructions and guidance; and

b. Apply the product according to the manufacturer's guidance to allow for ample cure time and to prevent treatment chemicals from being transported by runoff.

II.E. Sediment Controls

II.E.1. Dischargers shall implement the following site sediment controls:

a. Establish and maintain effective perimeter controls;

b. Stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from the site; and

c. Design, install, and maintain effective sediment controls to minimize the discharge of pollutants utilizing site-specific BMPs.

At a minimum, design sediment basins and impoundments according to the method provided in the California Stormwater Quality Association Construction BMP Handbook[3] and utilize outlet structures that withdraw water from the surface. Dischargers utilizing sediment basins shall complete installation prior to other land disturbance activities.

II.F. Additional Risk Level 2 and 3 Requirements:

II.F.1. Risk Level 2 and 3 dischargers shall implement the following additional erosion and sediment control BMPs for areas under active[4] construction:

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3 California Stormwater Quality Association (CASQA), Construction BMP Handbook (January 2015), <https://www.casqa.org/sites/default/files/casqa-handbook-construction/master_hanbook_file_2015_sec.pdf> [as of May 20, 2021] (CASQA Construction BMP Handbook)

4 Active areas of construction are areas undergoing land surface disturbance and associated site areas. This includes construction activity during the preliminary phase, mass grading phase, streets and utilities phase, and the vertical construction phase.

a. Design and construct cut and fill slopes in a manner to ensure slope stability and to minimize erosion including, but not limited to, these practices:

   i. Reduce continuous slope length using terracing and diversions;

   ii. Reduce slope steepness; and

   iii. Roughen slope surfaces with large cobble or track walking.

b. Install linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes according to sheet flow lengths as shown in Table 1 until the slope has reached Notice of Termination conditions for erosion protection. When infeasible to comply with Table 1 due to site-specific geology or topography, the QSD shall include in the SWPPP a justification for the use of an alternative method to protect slopes from erosion and sediment loss.

Table 1 - Critical Slope and Sheet Flow Length Combinations for Linear Sediment Reduction Barrier

Slope Ratio (Vertical to Horizontal)	Sheet flow length not to exceed
≤ 1:20	Per QSD's specification.
> 1:20 to ≤ 1:4	35 feet
> 1:4 to ≤ 1:3	20 feet
> 1:3 to ≤ 1:2	15 feet
> 1:2	10 feet

II.F.2. Limit construction activity traffic to and from the project to entrances and exits that employ effective controls to prevent off-site tracking of sediment.

II.F.3. Maintain and protect all storm drain inlets, perimeter controls, and BMPs at entrances and exits (e.g., tire wash off locations).

II.F.4. Remove any excess sediment or other construction activity-related materials that are deposited on the impervious roads by vacuuming or sweeping prior to any precipitation event.

II.F.5. Implement additional site-specific sediment controls upon written request by the Regional Water Boards when the implementation of the other requirements in this Section are determined to inadequately protect the site's receiving water(s).

II.G. Surface Water Buffer[5]

II.G.1. Dischargers shall provide and maintain natural buffers and/or equivalent erosion and sediment controls when a water of the U.S. is located within 50 feet of the site's earth disturbances, unless infeasible.

II.G.2. Dischargers shall comply with one of the following alternatives for any discharges to waters of the U.S. located within 50 feet of a site's earth disturbances:

a. Provide and maintain a 50-foot undisturbed natural buffer from the edge of the disturbed area to the top of bank;

b. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer. The equivalent sediment load may be calculated using RUSLE2 or another method approved by the Regional Water Board; or

c. Implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer when infeasible to provide and maintain an undisturbed natural buffer of any size. The equivalent sediment load may be calculated using RUSLE2 or another method approved by the Regional Water Board.

II.H. Pesticide Application

Dischargers shall only apply pesticides that have been authorized for use through California Department of Pesticide Regulation. The application of pesticides shall follow manufacturer's guidance.

II.I. Demolition of Existing Structure

Dischargers shall prevent exposing demolition materials to precipitation. Demolition materials should be covered with an impermeable barrier such as, but not limited to, plastic sheeting prior to precipitation to prevent known contaminants from being mobilized. Dischargers unable to cover demolished material that were not previously investigated or found to be absent of applicable pollutants in reportable quantities shall sample for any non-visible pollutants that may be in stormwater

5 The surface water buffer requirements apply to work above the top-of-bank or high-water level of waters of the United States. Work within a channel or streambed (water body-dependent construction), Clean Water Act § 404 projects with a § 401 certification, and projects where no natural surface buffer exists (e.g., concrete channelization) are exempt from the requirements. All types of in-channel work may be regulated under § 401 (Clean Water Act - Regional Boards), § 404 (Clean Water Act - Army Corps of Engineers), or §1602 (California Fish and Game Code).

discharges such as, but not limited to, asbestos, leaded paint, or Poly Chlorinated Biphenyls (PCBs)[6].

II.J. Maintenance and Repair

II.J.1. Dischargers shall begin maintaining, repairing, and/or implementing design changes (reviewing alternatives that have not been used yet) to BMPs within 72 hours of identification of failures or other shortcomings and complete the changes as soon as possible, prior to the next forecasted precipitation event.

II.J.2. Dischargers shall have a Qualified SWPPP Practitioner (QSP) verify all BMP maintenance and repairs were appropriately implemented during the next visual inspection following completion. The QSP may delegate BMP maintenance and repair verification to an appropriately trained delegate.

III. MONITORING REQUIREMENTS

III.A. General Requirements

The monitoring requirements of this Section are issued pursuant to Water Code § 13383 and specifies monitoring requirements for dischargers subject to this Order.

All dischargers shall implement the Construction Site Monitoring Program in compliance with this Section at the time of the commencement of construction activity and shall continue implementation until the project is complete and the project site is stabilized as defined in Section III.H in the Order.

III.B. Monitoring Exceptions

III.B.1. Dischargers shall conduct visual inspections and collect samples to meet the requirements of this Attachment. Dischargers are not required to physically conduct visual inspections or collect samples under the following conditions:

a. During dangerous weather conditions such as electrical storms, flooding, and high winds above 40 miles per hour;

b. Outside of scheduled site operating hours; or

c. When the site is not accessible to personnel.

III.B.2. For inactive projects, dischargers may reduce the visual inspection frequency and suspend sampling per Section III.G of the Order. Dischargers shall provide an explanation with supporting information for all missed visual inspections or sampling required by this Attachment, to be included in the Annual Report.

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6 PCBs were used between January 1, 1950 and January 1, 1980 and should be considered to be potentially present in structures built during that timeframe. “Structure”, in this instance, shall have been constructed with floor space (such as a building).

III.C. Visual Inspection Requirements

III.C.1. Dischargers shall perform visual inspections, based on their Risk Level, in accordance with Table 2 below. The purpose of visual inspections is, to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Except as specified in Section III.C.3 below, inspectors shall be the Qualified SWPPP Developer, Qualified SWPPP Practitioner, or be trained by the Qualified SWPPP Practitioner.

Table 2 – Visual Inspection Schedule[7]

Risk Level	Weekly	Pre-Qualifying Precipitation Event	During Qualifying Precipitation Event	Post-Qualifying Precipitation Event
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X

III.C.2. Dischargers shall conduct weekly visual inspections to ensure that BMPs are properly installed and maintained. A pre-, during, or post-qualifying precipitation event inspection also satisfies the weekly visual inspection requirement.

III.C.3. Dischargers shall have a QSP conduct a pre-Qualifying Precipitation Event inspection within 72 hours prior to any weather pattern that is forecasted to have a 50 percent or greater chance of 0.5 inches or more in a 24-hour period. Precipitation forecast information shall be obtained from the National Weather Service Forecast Office (e.g., by entering the zip code of the project's location at https://www.weather.gov/) and shall be included as part of the inspection checklist weather information. If extended forecast precipitation data (greater than three days) is available from the National Weather Service, the pre-precipitation event inspection may be done up to 120 hours in advance. The pre-Qualifying Precipitation Event inspection shall include an inspection of the following:

a. All stormwater drainage areas to identify leaks, spills, or uncontrolled pollutant sources and when necessary, implement appropriate corrective actions to control pollutant sources.

b. All BMPs to identify whether they have been properly implemented in accordance with the SWPPP, and when necessary, implement appropriate corrective actions to control pollutant sources.

c. All stormwater storage and containment areas to detect leaks and check for available capacity to prevent overflow.

III.C.4. Dischargers shall conduct visual inspections at least once every 24-hour period during Qualifying Precipitation Events. Qualifying Precipitation Events are

7 This table is limited to routine weekly inspections and Qualifying Precipitation Event related inspections. Other visual inspections may be required under this Permit and are described in the applicable sections.

extended for each subsequent 24-hour period forecast to have at least 0.25 inches of precipitation.

III.C.5. Dischargers shall conduct post-Qualifying Precipitation Event visual inspections within 96 hours after each Qualifying Precipitation Event if 0.5 inches or more precipitation is measured during the duration of the Qualifying Precipitation Event using the onsite rain gauge. The inspection is to:

a. Identify if BMPs were adequately designed, implemented, and effective;

b. Identify BMPs that require repair or replacement due to damage; and

c. Identify additional BMPs that need to be implemented and revise the SWPPP accordingly.

III.C.6. Dischargers shall conduct visual inspections during scheduled site operating hours.

III.C.7. For each required inspection, dischargers shall develop and complete an inspection checklist that, at a minimum includes:

a. Inspection type (weekly, pre-precipitation, daily precipitation, or post-precipitation event);

b. Inspection date and time the inspection was conducted;

c. Weather information, including the presence or absence of precipitation, an estimate of the beginning of the Qualifying Precipitation Event, duration of the event, date of the end of the Qualifying Precipitation Event, and the amount of precipitation in inches;

d. Site information, including stage of construction, activities completed since last inspection, and approximate area of the site exposed;

e. A description of any BMPs evaluated and any deficiencies noted, including those that may have resulted in the release of non-visible pollutants;

f. A list of BMPs inspected, including erosion controls, sediment controls, chemical and waste controls, and non-stormwater controls;

g. Report of the presence of any floating and suspended materials, odors, discolorations, visible sheens, and any sources of pollutants in discharges and contained stormwater;

h. Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates;

i. Photographs of areas of concern and the QSP's description of the problem, if any; and

j. Inspector's name, title, and certification, if any.

III.D. Water Quality Monitoring Requirements

Dischargers shall collect samples of discharges, based on their Risk Level in accordance with Table 3 and the requirements below, to monitor water quality and

assess compliance with the requirements of this General Permit. Samplers shall be the QSD, QSP, or be trained by the QSP.

Table 3 – Sample Collection Schedule

Risk Level	Stormwater Discharge Sample Collection (as applicable)	Receiving Water Sample Collection (as applicable)	Non-Visible Sample Collection (as applicable)
1	Not Applicable	Not Applicable	X
2	X	Not Applicable	X
3	X	X (Post-exceedance)	X

III.D.1. Risk Level 2 and 3 Stormwater Discharge Monitoring Requirements

III.D.1.a. Risk Level 2 and 3 dischargers shall collect stormwater grab samples, from all discharge locations incorporating runoff from project construction sites[8], during discharge and within site operating hours. The grab samples shall be representative of the discharge flow and characteristics.

III.D.1.b. Risk Level 2 and 3 dischargers shall obtain one sample from each discharge location per 24-hour period of each Qualifying Precipitation Event, during active discharge.

III.D.1.c. Risk Level 2 and 3 dischargers shall collect samples of stored or contained stormwater during discharge from the impoundment, in accordance with Attachment J.

III.D.1.d. Risk Level 2 and 3 dischargers shall analyze all samples for:

i. pH and turbidity (refer to Order, Section IV.C.3.c and d); and

ii. Any additional parameter required by the Regional Water Board.

III.D.1.e. Risk Level 2 and 3 dischargers may sample run-on from surrounding areas if there is reason to believe run-on may contribute to exceedance of numeric action levels and/or numeric effluent limitations.

III.D.2. Risk Level 3 Receiving Water Monitoring Requirements

III.D.2.a. Risk Level 3 dischargers who discharge directly into receiving waters are also required to monitor that receiving water if sampling results from the discharge monitoring location meets either of the following conditions:

i. pH value falls outside of the range of 6.0 and 9.0 pH units; or

ii. Turbidity exceeds 500 NTU.

8 The Glossary definition of ‘site’ applies here, i.e., *The area where the construction activity is physically located or conducted, including staging, storage, and access areas.*

III.D.2.b. Receiving water monitoring does not apply if run-on from a forest fire or any other natural disaster caused the stormwater results to fall outside the pH range or exceed the turbidity value.

III.D.2.c. Risk Level 3 dischargers required to conduct receiving water monitoring shall collect samples as follows:

i. Collect, at minimum, one upstream receiving water sample from an accessible and safe location that is:

1. Representative of the receiving water;
2. As close as possible to the discharge location; and
3. Upstream from the discharge location.

ii. Collect, at minimum, one downstream receiving water sample from an accessible and safe location that is:

1. Representative of the receiving water;
2. As close as possible to the discharge location; and
3. Downstream from the discharge location.

III.D.2.d. Risk Level 3 dischargers shall analyze the samples for the parameter that triggered this monitoring (either pH or turbidity, or both).

III.D.2.e. Risk Level 3 dischargers shall collect the samples once every 24-hour period of the Qualifying Precipitation Event.

III.D.2.f. Risk Level 3 dischargers shall specify the specific locations where samples were collected, date and time of sample collection, as well as constituents analyzed.

III.D.2.g. The Regional Water Board delegate may require, in writing, that the Risk Level 3 discharger continue to sample the receiving water for the parameter that required this monitoring (pH and/or turbidity) after the Qualifying Precipitation Event ends.

III.D.3. Non-Visible Pollutant Monitoring Requirements

III.D.3.a. Dischargers shall implement sampling and analysis requirements to monitor non-visible pollutants when there is:

i. Evidence of pollutant releases that are not visually detectable in stormwater discharges; and

ii. Releases of substances which could cause or contribute to an exceedance of water quality objectives in the receiving waters.

III.D.3.b. Dischargers are required to conduct sampling and analysis for non-visible pollutants identified in the SWPPP or otherwise known to be on site, only when the pollutants may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

III.D.3.c. Dischargers shall collect at least one sample, within 8 hours, from each discharge location hydraulically down-gradient from the observed triggering event or condition.

III.D.3.d. Dischargers shall continue to collect at least one sample per applicable discharge location for each 24-hour period that there is discharge, until the necessary corrective actions are completed to control further discharge of the pollutant.

III.D.3.e. Dischargers are not required to sample if one of the conditions described in Section III.D.3.b above (e.g., breach or spill) occurs and, prior to discharge, the material containing the pollutant is fully remediated or removed; and BMPs to control the pollutant are implemented, maintained, or replaced as necessary.

III.D.3.f. Dischargers shall analyze samples in the field or submit them to a laboratory as specified in Section III.F of this Attachment for analysis of all non-visible pollutants suspected to be present in the discharge, including applicable TMDL-specific pollutants listed in Table H-2 in Attachment H.

III.E. Sample Collection and Handling Instructions

III.E.1. Dischargers shall:

a. Identify applicable parameters that require laboratory analysis for each stormwater discharge location (pH and turbidity are typically analyzed with field meters).

b. Request the laboratory provide the appropriate number of sample containers, types of containers, sample container labels, blank Chain of Custody forms, and sample preservation instructions.

c. Use the appropriate sample shipping method to the laboratory. The laboratory should receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory to meet all method hold times). The options are to either deliver the samples to the laboratory, arrange to have the laboratory pick them up, or ship them overnight to the laboratory.

d. Use only the sample containers provided/specified by the laboratory to collect and store samples. Use of any other type of containers could cause sample contamination.

e. Prevent sample contamination by not touching or putting anything into the sample containers before collecting stormwater samples.

f. Not overfill sample containers. Overfilling can change the analytical results.

g. Secure each sample container cap without stripping the cap threads.

h. Label each sample container. The label shall identify the date and time of sample collection, the person taking the sample, and the sample collection location or discharge point. The label should also identify any sample containers that have been preserved.

i. Carefully pack the sample container into an ice chest or refrigerator to prevent breakage and maintain temperature during shipment; frozen ice packs or ice is placed into the shipping container to keep the sample close to 4° C (39° F) until arriving at the laboratory (do not freeze samples).

j. Complete a Chain of Custody form with each set of samples. The Chain of Custody form shall include the discharger's name, address, and phone number, identification of each sample container and sample collection point, person collecting the samples, the date and time each sample container was filled, the analysis that is required for each sample container, and both the signatures of the persons relinquishing and receiving the sample containers.

III.E.2. The Discharger shall designate and train personnel for the collection, maintenance, and shipment of samples in accordance with the above sample protocols and laboratory-specific practices.

III.E.3. Dischargers shall perform all sampling and preservation protocols in accordance with the 40 Code of Federal Regulations Part 136 and the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association).[9]

III.E.4. Dischargers may refer to the Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Program Plan (QAPrP) for more information on sampling collection and analysis.[10]

III.F. Analytical Methods Requirements

III.F.1. Dischargers shall refer to Table 4 for applicable test methods, detection limits, and reporting units.

9 Unless other test procedures have been specified in this General Permit or by the Water Boards.

10 Additional information regarding the SWAMP QAPrP can be found at: <https://www.waterboards.ca.gov/water_issues/programs/swamp/quality_assurance.html#qaprp>. [as of October 20, 2020]

Table 4 - Test Methods, Detection Limits and Reporting Units

Parameter	Test Method	Discharger Type	Method Detection Limit	Reporting Units
pH	Field test with calibrated portable instrument using U.S. EPA approved procedures	Risk Level 2 and 3	0.2	pH units
Turbidity	U.S. EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2 and 3	1	NTU
Non-Visible Pollutant Parameter(s)	U.S. EPA-approved test method for the specific pollutant parameter	All Risk Levels	Dependent on the test method	Dependent on the test method

III.F.2. All monitoring instruments and equipment shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. Additionally, records of calibration shall be retained for at least three years and made available upon request.

III.F.3. Risk Level 2 and 3 dischargers shall perform pH analysis on-site with a calibrated pH meter using a U.S. EPA acceptable test method.

III.F.4. Risk Level 2 and 3 dischargers shall perform turbidity analysis using a calibrated turbidity meter (turbidimeter), either on-site or at a State Water Board Environmental Laboratory Accreditation Program (ELAP)-accredited laboratory. Acceptable test methods include Standard Method 2130 B or U.S. EPA Method 180.1.

III.F.5. All analyses of laboratory-analyzed parameters shall be sent to and conducted at a laboratory recognized by the State Water Board Environmental Laboratory Accreditation Program (ELAP), with the exception of field analysis conducted by the discharger for turbidity and pH.

III.F.6. All dischargers shall assign a value of zero (0) for all non-visible pollutant analytical results less than the minimum level (reporting limit), as reported by the laboratory, used in calculations required by this permit (e.g., numeric action level and numeric effluent limitation exceedance determinations), so long as a sufficiently sensitive test method was used as evidenced by the reported method detection limit and minimum level.

III.G. Exceedance Response Requirements[11]

III.G.1. Dischargers are subject to the applicable numeric action levels and/or numeric effluent limitations based on their Risk Level as shown in Table 5 below.

11 Terms including, but not limited to, numeric action level, numeric effluent limitation, and exceedances are defined in Attachment B of this General Permit.

Table 5 - Numeric Action Levels and Numeric Effluent Limitations

Parameter	Discharger Type	Numeric Action Level	Numeric Effluent Limitation
pH	Risk Level 2 and 3	Lower = 6.5 Upper = 8.5	Not Applicable
Turbidity	Risk Level 2 and 3	250 NTU	Not Applicable
TMDL-related Pollutant	Responsible Dischargers with a project of any Risk Level	Refer to Table H-2 in Attachment H	Refer to Table H-2 in Attachment H

III.G.2. For pH and turbidity, the discharger shall use the field meter readings obtained from each discharge location per day of discharge to determine if there has been an exceedance of the numeric action levels.

III.G.3. Whenever analytical results indicate that the discharge is below the lower pH value, above the upper pH value, exceeds the turbidity value, or exceeds an applicable TMDL-related numeric action level or numeric effluent limitation, dischargers shall determine the source(s) of the pollutant and immediately implement corrective actions to:

a. Meet Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology requirements in 40 Code of Federal Regulations §§ 450.21 through 450.23[12]; and

b. Reduce or prevent pollutants in stormwater and authorized non-stormwater discharges from causing further exceedances.

III.G.4. Dischargers shall iterate corrective actions until the discharge is in compliance with the applicable numeric action level(s).

III.G.5. The source evaluation shall be kept with the SWPPP and specifically address what corrective actions were taken or will be taken and provide a schedule for their completion.

IV. REPORTING REQUIREMENTS

IV.A. Visual Inspections

Dischargers shall keep all completed inspection checklists and related documentation with the SWPPP on-site or electronically.

12 United States Environmental Protection Agency, Construction and Development Effluent Limitation Guidelines §§ 450.21 through 450.23, <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N/part-450/subpart-B?toc=1> [as of June 28, 2022].

IV.B. Water Quality Monitoring

IV.B.1. Risk Level 2 and 3 Stormwater Discharge Monitoring Reporting

IV.B.1.a. Risk Level 2 and 3 dischargers shall electronically submit through SMARTS all field sampling results within 30 days of the completion of the precipitation event or within 10 days if the field sampling results demonstrate the exceedance of the pH, and/or turbidity numeric action levels.

IV.B.1.b. Risk Level 2 and 3 dischargers that exceeded the pH and/or turbidity numeric action levels shall prepare a Numeric Action Level Exceedance Report when requested, in writing, from a Regional Water Board delegate and shall submit and certify each Numeric Action Level Exceedance Report through SMARTS within 30 days of receiving the written request, in accordance with Section IV of this General Permit's Order.

IV.B.1.c. The Numeric Action Level Exceedance Report shall include:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) for each parameter;

ii. The date, place, time of sampling, visual inspections, and/or measurements, including precipitation; and

iii. An assessment of the existing BMPs associated with the sample that exceeded the numeric action level, a description of each corrective action taken including photographs, and date of implementation.

IV.B.1.d. Risk Level 2 and 3 dischargers that prepared a Numeric Action Level Exceedance Report shall retain a copy of the report for a minimum of three years after the date the exceedance report is certified and submitted.

IV.B.2. Risk Level 3 Receiving Water Monitoring Reporting

IV.B.2.a. Risk Level 3 dischargers shall electronically submit all receiving water sample results through SMARTS within 10 days of a precipitation event.

IV.B.3. Non-Visible Pollutant Monitoring Reporting

IV.B.3.a. All dischargers that conducted non-visible pollutant monitoring shall electronically submit through SMARTS all field and/or analytical sampling results within 30 days after obtaining the analytical result or within 10 days after if the analytical results demonstrate the exceedance of an applicable TMDL-related numeric action level or numeric effluent limitation or Basin Plan parameter.

IV.B.3.b. All dischargers that exceeded an applicable TMDL-related numeric action level shall prepare a Numeric Action Level Exceedance Report when requested, in writing, from a Regional Water Board delegate and shall submit and certify each Numeric Action Level Exceedance Report through SMARTS within 30 days of receiving the written request, in accordance with Section IV of this General Permit's Order.

IV.B.3.c. The Numeric Action Level Exceedance Report shall include:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) for each parameter;

ii. The date, place, time of sampling, visual inspections, and/or measurements, including precipitation; and

iii. An assessment of the existing BMPs associated with the sample that exceeded the numeric action level, a description of each corrective action taken including photographs, and date of implementation.

IV.B.3.d. All dischargers that prepared a Numeric Action Level Exceedance Report shall retain a copy of the report for a minimum of three years after the date the exceedance report is certified and submitted.

IV.B.3.e. All dischargers that exceed an applicable TMDL-related numeric effluent limitation shall comply with the water quality-based corrective action requirements in Section VI.Q of the Order.

ATTACHMENT D.1

RISK DETERMINATION WORKSHEET

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

The Risk Determination Worksheet in this Attachment serves as guidance for construction stormwater dischargers and may be used to manually calculate the site-specific risk of a construction project. Dischargers are required to submit risk information using the Stormwater Multiple Application and Report Tracking System (SMARTS) as part of filing a Notice of Intent for coverage under the Construction Stormwater General Permit.

Dischargers may use SMARTS to auto-populate values for the soil erodibility factor (K factor), length-slope factor (LS factor), and the receiving water risk (the risk sediment poses to receiving waters) based on the provided latitude and longitude coordinates for the project. SMARTS relies on the same data as the GIS map method, which dischargers can use to confirm the auto-populated values. Dischargers may alternatively use the individual method, a site-specific analysis, to determine the K factor, LS factor, and receiving water risk where GIS data may not accurately reflect the site's characteristics.

Dischargers may use a combination of the GIS map method or individual method to calculate the K factor, LS factor, sediment risk, and receiving water risk in steps 1 and 2, depending on which method is judged to be the most accurate for the site.

SMARTS will automatically determine the combined Risk Level based on the entered information.

Instructions:

Step 1 – Determine sediment risk via one of the following options:

- GIS Map Method - EPA Rainfall Erosivity Calculator & GIS Map
- Individual Method - EPA Rainfall Erosivity Calculator & Individual Data

Step 2 – Determine receiving water risk via one of the following options:

- GIS Map Method - GIS Map of Sediment-Sensitive Watersheds
- Individual Method - Provided Sediment Impaired Water Bodies

Step 3 – Determine combined Risk Level

Step 1 – Sediment Risk Worksheet

The Construction Stormwater General Permit requires dischargers to calculate sediment risk by multiplying the rainfall erosivity (R), soil erodibility (K), and length-slope (LS) factors. Determine the values for each of the factors and use the table below to assess the site-specific sediment risk for the construction project.

a. Rainfall Erosivity (R) Factor

Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-minute intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S.

A guide for the U.S. EPA Rainfall Erosivity Factor Calculator (https://www.waterboards.ca.gov/water_issues/programs/stormwater/smarts/construction/docs/rfactor_guide.pdf) is available to dischargers to assist with calculating the site-specific R factor.

R Factor Value = _____

b. Soil Erodibility (K) Factor

The soil erodibility (K) factor represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff.

A soil erodibility nomograph is provided on page 4 to assist the discharger with determining the site-specific K factor.

K Factor Value = _____

c. Length-Slope (LS) Factor

The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases.

A length-slope table is provided on page 5 to assist the discharger with estimating the weighted LS factor for the site prior to construction.

LS Factor Value = _____

d. Watershed Erosion Estimate

Estimate watershed erosion by multiplying the R, K, and LS factors, then use the table below to determine the site-specific sediment risk for the project.

Watershed Erosion Estimate (tons/acre) = R x K x LS = _____

Watershed Erosion Estimate (tons/acre)	Site-Specific Sediment Risk
Less than 15 tons/acre	Low
Greater than or equal to 15 tons/acre and less than 75 tons/acre	Medium
Greater than or equal to 75 tons/acre	High

Site-specific Sediment Risk (High, Medium, or Low) = _____

e. Sediment Risk GIS Map Method

In addition to the U.S. EPA Rainfall Erosivity Factor Calculator, State Water Board staff has prepared map tools to assist dischargers with estimating site-specific K and LS factors. Dischargers may use the map tools instead of manually determining the K and LS factors using the nomograph on page 4 and tables on page 5. Additionally, SMARTS is equipped with an auto-populate feature that can generate K and LS factors given the project latitude and longitude coordinates.

K Factor Map

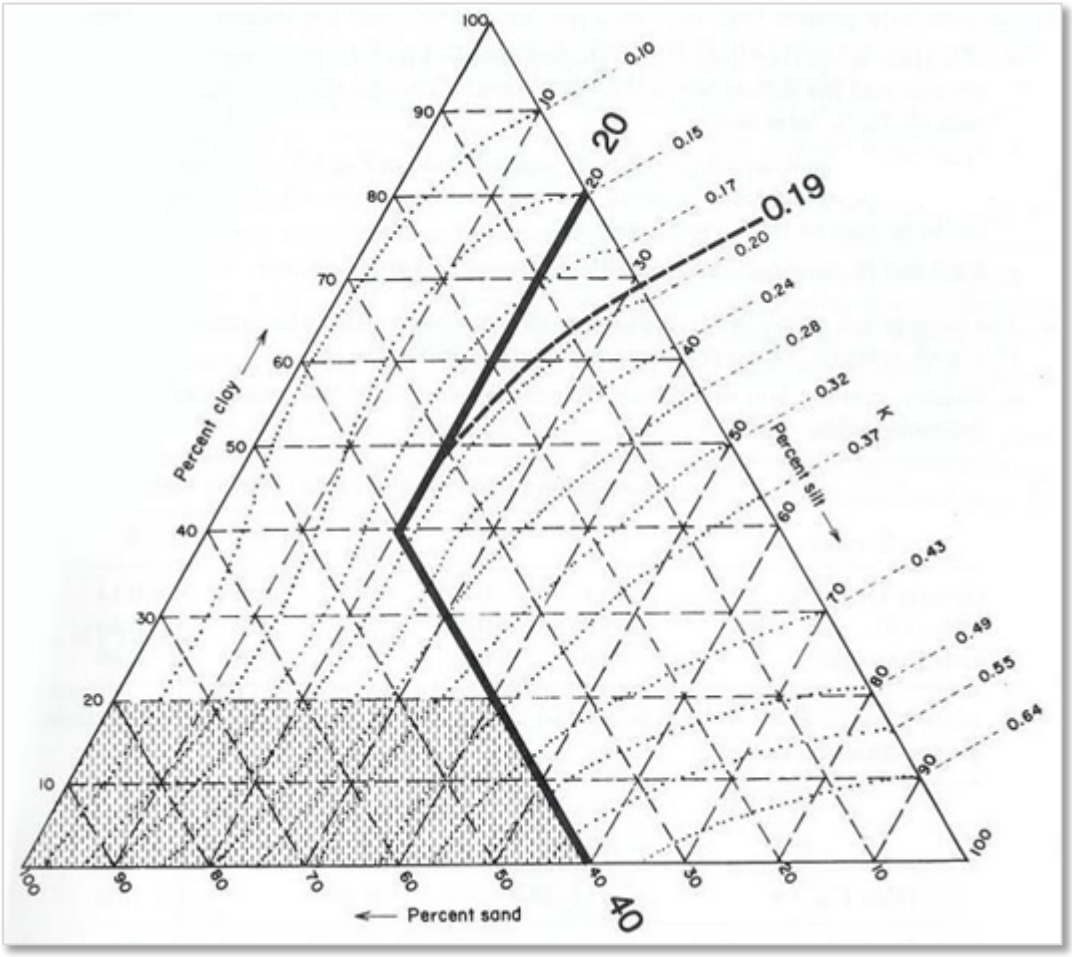
(https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/guidance/k_factor_map.pdf)

LS Factor Map

(https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/guidance/ls_factor_map.pdf)

Soil Erodibility (K) Factor Nomograph

The K factor can be determined by using the nomograph method, which requires that a particle size analysis (ASTM D-422)[1,2] be conducted to determine the percentages of sand, very fine sand, silt, and clay. Use the figure below to determine the appropriate K factor value.



The figure above is the Erickson triangular nomograph used by the USDA to determine the K factor for a soil based on its texture (percent silt plus very fine sand, percent sand, percent organic matter, soil structure, and permeability).

1 ASTM D-422 is the standard test method used for the quantitative determination of the distribution of particle sizes in soils.

2 Environmental Protection Agency, American Society for Testing and Materials (ASTM) Standards, <https://www.epa.gov/sites/default/files/2020-01/documents/sedc_2004-2005_append.pdf> [as of June 22, 2022]

Nomograph from Erickson 1977, as referenced in Goldman et. al., 1986.
Length-Slope (LS) Factor Table for Construction Sites

To determine a construction site's specific LS factor locate the intercept of the site's Sheet Flow Length (ft) and Average Watershed Slope (percent). Table from Renard et. al., 1997.

Sheet Flow Length (ft)	Average Watershed Slope (percent)									
	0.2	0.5	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0
< 3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.35
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.37
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.38
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.39
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.40
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36	0.45	0.57
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54	0.70	0.91
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69	0.91	1.20
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82	1.10	1.46
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86	1.05	1.43	1.88
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02	1.25	1.72	2.34
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16	1.43	1.99	2.72
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28	1.60	2.24	3.09
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51	1.90	2.70	3.75
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91	2.43	3.52	4.95
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25	2.89	4.24	6.03
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55	3.30	4.91	7.02

Sheet Flow Length (ft)	Average Watershed Slope (percent)								
	12.0	14.0	16.0	20.0	25.0	30.0	40.0	50.0	60.0
< 3	0.36	0.38	0.39	0.41	0.45	0.48	0.53	0.58	0.63
6	0.41	0.45	0.49	0.56	0.64	0.72	0.85	0.97	1.07
9	0.45	0.51	0.56	0.67	0.80	0.91	1.13	1.31	1.47
12	0.47	0.55	0.62	0.76	0.93	1.08	1.37	1.62	1.84
15	0.49	0.58	0.67	0.84	1.04	1.24	1.59	1.91	2.19
25	0.71	0.85	0.98	1.24	1.56	1.86	2.41	2.91	3.36
50	1.15	1.40	1.64	2.10	2.67	3.22	4.24	5.16	5.97
75	1.54	1.87	2.21	2.86	3.67	4.44	5.89	7.20	8.37
100	1.88	2.31	2.73	3.57	4.59	5.58	7.44	9.13	10.63
150	2.51	3.09	3.68	4.85	6.30	7.70	10.35	12.75	14.89
200	3.07	3.81	4.56	6.04	7.88	9.67	13.07	16.16	18.92
250	3.60	4.48	5.37	7.16	9.38	11.55	15.67	19.42	22.78
300	4.09	5.11	6.15	8.23	10.81	13.35	18.17	22.57	26.51
400	5.01	6.30	7.60	10.24	13.53	16.77	22.95	28.60	33.67
600	6.67	8.45	10.26	13.94	18.57	23.14	31.89	39.95	47.18
800	8.17	10.40	12.69	17.35	23.24	29.07	40.29	50.63	59.93
1000	9.57	12.23	14.96	20.57	27.66	34.71	48.29	60.84	72.15

Step 2 – Receiving Water Risk Worksheet

Receiving water risk is based on whether a project drains to a water body or watershed that is sediment-sensitive. If the answer to either question below is "yes", the project is considered a **high** receiving water risk. If the answer to both questions below is "no", the project is considered a **low** receiving water risk.

1. Does the disturbed area discharge (either directly or indirectly) to a 303(d)-listed water body impaired by sediment? For help with identifying impaired water bodies, please refer to the 2020 – 2022 California Integrated Report (Clean Water Act Section 303(d) - 305(b) Report) (https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html).

OR

2. Does the disturbed area discharge (either directly or indirectly) to a water body with designated beneficial uses of COLD, SPAWN, and MIGRATORY? For help with identifying designated beneficial uses, please refer to the appropriate Regional Water Quality Control Board Basin Plan below.

Region 1 – North Coast Basin Plan
(https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/)

Region 2 – San Francisco Bay Basin Plan
(https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html#2010basinplan)

Region 3 – Central Coast Basin Plan
(https://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/index.html)

Region 4 – Los Angeles Basin Plan
(https://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/)

Region 5 – Central Valley Basin Plan[3]
(https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.html)

Region 6 – Lahontan Basin Plan
(https://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/index.html)

Region 7 – Colorado River Basin Plan
(https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_planning/)

Region 8 – Santa Ana Basin Plan
(https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/index.html)

3 The Central Valley Basin Plan lists the COLD beneficial use designation as part of the SPAWN and MIGRATORY beneficial uses. Waterbodies will be considered high-risk receiving waters if listed as SPAWN (COLD) and MIGRATORY (COLD).

Region 9 – San Diego Basin Plan
(https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.html)

Sediment-Sensitive Watershed GIS Map Method

State Water Board staff has prepared a High-Risk Receiving Watershed Map tool (https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/guidance/receivingwaterrisk.pdf) to assist dischargers with determining site-specific receiving water risk. Additionally, SMARTS is equipped with an auto-populate feature that can determine the receiving water risk based on the project latitude and longitude coordinates. Projects located in the watersheds highlighted in red are considered high-risk. Please note that the map option may not reflect the correct receiving watershed, lacking site-specific drainage information.

The discharger is responsible for identifying the appropriate receiving water. If the project does not discharge to the watershed as depicted on the High-Risk Receiving Watershed Map, please contact the appropriate Regional Water Quality Control Board.

Site-Specific Receiving Water Risk (High or Low) = _____

Step 3 – Combined Risk Level Matrix

The below matrix is used to determine the combined Risk Level of the project, factoring in both sediment risk and receiving water risk.

		Sediment Risk		
		Low	Medium	High
Receiving Water Risk	Low	Level 1	Level 2	
	High	Level 2		Level 3

Combined Risk Level (1, 2, or 3) = _____

ATTACHMENT D.2

PERMIT REGISTRATION DOCUMENT REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

I. PERMIT REGISTRATION DOCUMENT REQUIREMENTS

All Linear Underground and Overhead Projects shall comply with the Permit Registration Document requirements in Attachments E, E.1, and E.2 of this General Permit. All traditional construction projects shall comply with Permit Registration Document requirements in this General Permit and this Attachment.

I.A. General Permit Registration Document Submittal Requirements

Dischargers of stormwater associated with construction activity that result in the disturbance of one acre or more of land area shall apply for and obtain coverage under NPDES General Construction for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit). Any construction activity that is a part of a larger common plan of development or sale must also be covered under this General Permit, regardless of size. For example, if 0.5 acre of a 20-acre subdivision is disturbed by the construction activities of discharger A and the remaining 19.5 acres is to be developed by discharger B, discharger A must obtain this General Permit for the 0.5-acre site.

Other discharges from construction activities that are covered under this General Permit can be found in Section II of the Order of this General Permit.

It is the Legally Responsible Person's responsibility to obtain coverage under this General Permit by electronically certifying and submitting complete Permit Registration Documents.

I.B. Fees

I.B.1. A discharger must submit the appropriate fee with its completed Notice of Intent application package. Fees are established through regulations adopted by the State Water Board every year.[1] Fees are subject to change by regulation.

I.B.2. Where the fee is calculated based upon the total area of land disturbed (opposed to the total acreage of land owned), total acreage includes all areas anticipated to be disturbed throughout the duration of the project (e.g., 10 acres are scheduled

1 California Code of Regulations (CCR), Title 23, Division 3, Chapter 9. Waste Discharge Reports and Requirements, Article 1. Fees.

to be disturbed the first year and 10 acres in each subsequent year for 5 years; the fees would be based upon 50 acres of total disturbance).

I.B.3. Dischargers that apply for and satisfy the Small Construction Rainfall Erosivity Wavier requirements shall pay the applicable fee.

I.C. Permit Registration Document Submittal Prior to Commencement of Construction

Dischargers proposing to conduct construction activities subject to this General Permit shall certify and submit Permit Registration Documents prior to the commencement of construction activity. Construction activity cannot commence until the WDID number is issued.

In all cases, except public emergencies (e.g., wildfire, flood), Permit Registration Documents must be completed and WDID number issued before construction can commence (refer to Section III.A.3 of the Order of this General Permit).

I.D. Submittal of Complete Permit Registration Documents

All dischargers required to comply with this General Permit shall electronically certify and submit the required Permit Registration Documents, through the Stormwater Multiple Application and Report Tracking System (SMARTS). The discharger shall assure that all information in its Permit Registration Documents complies with the Homeland Security Act and other federal law addressing security in the United States.

The discharger shall submit completed Permit Registration Documents to obtain coverage under this General Permit. If any of the required items are incomplete or missing, the submittal will be rejected.

The State Water Board will process the application package in the order received and assign a WDID number upon receipt of a complete submittal. Permit coverage begins once a WDID number is assigned.

II. STANDARD PERMIT REGISTRATION DOCUMENTS

II.A. Notice of Intent

The Notice of Intent is a site-specific application to obtain coverage for discharges of stormwater and authorized non-stormwater from construction and land disturbance activities to waters of the United States. The application includes the entry of site information, contact information, and site-specific requirements.

II.B. Risk Level Determination

All dischargers are required to conduct a Risk Level Determination, where the site's overall risk is separated into sediment risk and receiving water risk. The discharger must utilize either the Water Board's standard risk determination (provided in

SMARTS), a site-specific risk determination, or a combination of the two as described in Attachment D.1 of this General Permit.

II.B.1. A standard risk determination, using the Geographic Information Systems (GIS) map method, includes utilizing the following:

i. U.S. EPA Rainfall Erosivity (R) Factor Calculator website;

ii.. Sediment Risk Map tool; and

iii. High-Risk Receiving Watershed Map tool.

II.B.2. A site-specific risk determination, using the individual method, includes utilizing the following:

i. U.S. EPA Rainfall Erosivity (R) Factor Calculator website;

ii. Manually calculated soil erodibility (K) and length-slope (LS) factors; and

iii. 303(d) list of water bodies impaired for sediment.

II.B.3. The applicable beneficial uses for the receiving water are listed in the Regional Water Quality Control Board Basin Plan applicable to the site.

II.B.4. Sites that discharge to an unlisted receiving water that is tributary to a sediment-sensitive waterbody, within the Hydrologic Unit Code 10 (HUC 10) watershed scale, are considered high receiving water risk sites.

II.B.5. The discharger may use a combination of the standard and site-specific risk determination methods to calculate the soil erodibility (K), length-slope (LS) sediment risk, and receiving water risk factors.

II.B.6. The discharger shall calculate the site's sediment risk and receiving water risk during all phases of construction activity (e.g., demolition and pre-development site preparation, grading and land development, streets and utilities, vertical construction, final landscaping, and site stabilization). The construction start date begins with initial disturbance to land, including disturbances under previous landowners, and ends with final stabilization of the site.

II.B.7. SMARTS will assign the higher Risk Level to the entire site for any site spanning two or more planning watersheds.

II.B.8. Sites, parcels, or individual lots that are part of a larger plan of development shall include the larger plan of development in Risk Level determination. The discharger shall include this determination in the Permit Registration Documents submittal.

II.B.9. Dischargers may request that the Regional Water Board revise the site-specific Risk Level determination values in SMARTS by providing the following information to the Regional Water Board:

i. A site-specific soils test (ASTM D-422)[2,3] certified by an accredited Materials Testing Laboratory and reviewed by a QSD to determine the K factor used in the revised Risk Level determination. The soil testing must include the soil classification method used (e.g., Unified Soil Classification System);

ii. Review of a site-specific survey or plan by a QSD to determine the LS factor used in the revised Risk Level determination; and

iii. A revised Risk Level determination manually calculated in accordance with Attachment D.1 of this General Permit.

II.C. Site-Specific Stormwater Pollution Prevention Plan, Drawings, and Map

The Stormwater Pollution Prevention Plan (SWPPP) (including site-specific drawings and map) is a site-specific document developed for implementation of this General Permit. The SWPPP shall be developed by a Qualified SWPPP Developer and certified and submitted by each discharger with the other Permit Registration Documents.

II.D. Additional Requirements

II.D.1. All dischargers, other than Linear Underground and Overhead Project dischargers or dischargers subject to the post-construction requirements of an existing NPDES Phase I or II MS4 permit, shall complete the post-construction calculations and upload post-construction plans and other supporting documentation as an attachment in SMARTS.

II.D.2. All dischargers, other than Linear Underground and Overhead Project dischargers, within a Phase I or II municipal separate storm sewer system permitted area, shall upload the following items in SMARTS:

II.D.2.a. An attachment or web-source containing the applicable NPDES Phase I or Phase II municipal separate storm sewer system permittee's post-construction requirements; and

II.D.2.b. The post-construction plans and calculations submitted to or approved by the applicable NPDES Phase I or Phase II municipal separate storm sewer system permittee.

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2 ASTM D-422 is the standard test method used for the quantitative determination of the distribution of particle sizes in soils.

3 Environmental Protection Agency, American Society for Testing and Materials (ASTM) Standards, <https://www.epa.gov/sites/default/files/2020-01/documents/sedc_2004-2005_append.pdf> [as of June 22, 2022]

II.D.3. Dischargers who are proposing to implement an Active Treatment System shall also certify and submit in SMARTS:

II.D.3.a. Complete Active Treatment System Plan in accordance with Attachment F at least 14 days prior to the planned operation of the Active Treatment System and a copy shall be available on-site during Active Treatment System operation;

II.D.3.b. System design and supporting documentation; and

II.D.3.c. Proof that the system and/or Active Treatment System Plan was designed by a qualified Active Treatment System professional in accordance with Attachment F of this General Permit.

II.D.4. Dischargers who are proposing to implement passive treatment shall certify and submit in SMARTS:

II.D.4.a. Complete Passive Treatment Plan in accordance with Attachment G of this General Permit at least 14 days prior to the planned operation of the passive treatment system and a copy shall be available on-site during operation;

II.D.4.b. System design and supporting documentation; and

II.D.4.c. Proof that the Passive Treatment Plan and/or system was designed by an appropriate licensed professional (see Attachment G of this General Permit).

II.D.5. Dischargers who are proposing an alternate Risk Justification shall include:

II.D.5.a. Soil type identification through an accredited Materials Testing Laboratory analysis and reviewed by a QSD; and

II.D.5.b. Review of a site-specific slope survey or plan by a QSD to determine the LS factor used in the revised Risk Level determination.

II.E. Certification of Submitted Documents

The Legally Responsible Person shall certify and submit all Permit Registration Documents required by this General Permit through SMARTS. The discharger's Legally Responsible Person shall have a signed original Electronic Authorization Form on file with the State Water Board for each organization in SMARTS.

II.F. Exceptions to Standard Permit Registration Document Requirements

Construction sites with a valid Small Construction Rainfall Erosivity Wavier are not required to submit a SWPPP (including site-specific drawings and map).

II.G. Assistance

Dischargers and discharger representatives may email the State Water Board, Stormwater Help Desk, at stormwater@waterboards.ca.gov, to answer questions.

ATTACHMENT E

LINEAR UNDERGROUND AND OVERHEAD PROJECT REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

I. LINEAR UNDERGROUND AND OVERHEAD PROJECT BASELINE REQUIREMENTS

Linear underground and overhead projects are identified as one of three types of risk (Type 1, 2, and 3) based on the project area or segment's threat to water quality. Risk Types for linear projects are determined through SMARTS and clarified in Attachment E.1 of this General Permit when obtaining permit coverage. Risk Type 1, 2, and 3 dischargers shall implement the following minimum best management practices to reduce or prevent pollutants in construction stormwater discharges, and comply with monitoring and reporting requirements. If a requirement in this Attachment does not specify a specific Risk Type, then the requirement applies to Risk Type 1, 2, and 3 dischargers.

II. MINIMUM BEST MANAGEMENT PRACTICES

II.A. Good Site Management "Housekeeping"

II.A.1. Dischargers shall implement good site management measures (i.e., "housekeeping") for construction materials on a linear project site that could potentially be a threat to water quality if discharged or exposed to stormwater. At a minimum, dischargers shall implement the following good housekeeping measures:

a. Identify and protect the products used and/or expected to be used, and the end products that are produced and/or expected to be produced from exposure to stormwater. This requirement does not apply to materials and equipment that are designed to be outdoors and exposed to environmental conditions (e.g., poles, equipment pads, cabinets, conductors, insulators, bricks);

b. Apply best management practices (BMPs) to erodible stockpiled construction materials (e.g., soil, spoils, fly-ash, stucco, hydrated lime) to prevent erosion and pollutant transport;

c. Store chemicals in watertight containers with secondary containment to prevent any spillage or leakage or store in a complete enclosed storage area;

d. Minimize exposure of construction materials to precipitation. This requirement does not include materials and equipment that are designed to

be outdoors and exposed to environmental conditions (e.g., poles, equipment pads, cabinets, conductors, insulators, bricks);

e. Implement BMPs to control the off-site tracking of sediment and loose construction and landscape materials; and

f. Implement BMPs to control the discharge of plastic materials and limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Dischargers shall consider the use of plastic materials resistant to solar degradation where plastic materials are deemed necessary.

II.A.2. Dischargers shall implement good housekeeping measures for waste management, which, at a minimum to the extent feasible, shall consist of the following:

a. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, masonry wash waters, and other wash waters. Wash waters shall be captured and treated prior to discharge or disposed of at a permitted facility that can accept that waste, to mitigate impacts to water quality;

b. Provide containment (e.g., secondary containment) of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the stormwater drainage system or receiving water;

c. Clean or replace sanitation facilities and inspecting them regularly for leaks and spills;

d. Keep debris or trash in waste containers if it is subject to transport from the site by wind or runoff;

e. Cover waste disposal containers at the end of every business day and during a precipitation event;

f. Prevent discharges from waste disposal containers to the stormwater drainage system or receiving water (e.g., containers with solid bottoms and regular maintenance);

g. Contain and securely protect stockpiled waste material from wind and precipitation unless actively being used; and

h. Secure and contain concrete washout areas and other washout areas that may contain additional pollutants to minimize discharge into the underlying soil and onto the surrounding areas. Washout areas shall be covered prior to and during a precipitation event.

II.A.3. Dischargers shall implement good housekeeping for vehicle/equipment storage and maintenance, which shall consist of the following:

a. Contain fuel, grease, and oil to prevent them from leaking into the ground, storm drains, or surface waters;

b. Place all equipment or vehicles, which are to be fueled, maintained, and stored in a designated area with BMPs installed; and

c. Clean leaks immediately and dispose of leaked materials properly in accordance with the law.

II.A.4. Dischargers shall implement good housekeeping for landscape materials, which, at a minimum, shall consist of the following:

a. Contain and protect stockpiled materials such as mulches and topsoil, or other erodible landscape materials, from wind and precipitations unless being actively used;

b. Contain packaged landscape materials (e.g., fertilizers) when they are not being actively used;

c. Discontinue the application of any erodible landscape material at least 2 days before a forecasted precipitation event as defined in Attachment B or during periods of precipitation; and

d. Apply erodible landscape material at quantities and rates according to manufacturer recommendations or based on written specifications by knowledgeable and experienced field personnel.

II.A.5. Dischargers shall implement good housekeeping measures on the linear construction site, and of site operations, to control aerial deposition of site materials. Such particulates can include, but are not limited to, metals, nutrients, organics, sediment, other particulates, and trash.

II.A.6. Dischargers shall document all housekeeping BMPs in the Stormwater Pollution Prevention Plan (SWPPP) that correspond to the nature and phase of the construction activities.

II.B. Non-Stormwater Management

II.B.1. Dischargers shall implement the following measures to control all non-stormwater discharges during construction, to the extent feasible:

a. Wash vehicles in such a manner as to prevent non-stormwater discharges to surface waters or municipal separate storm sewer system drainage systems;

b. Clean streets in such a manner as to prevent unauthorized non-stormwater discharges from reaching surface water or municipal separate storm sewer system drainage systems; and

c. Eliminate any non-stormwater discharges that are not specified in Section IV.A of this General Permit’s Order, Authorized Non-Stormwater Discharges.

II.C. Preserve Existing Topsoil

II.C.1. Dischargers shall preserve existing topsoil, unless infeasible, through the following practices:

a. Stockpiling existing topsoil, or transferring topsoil to other locations, to deploy and reestablish vegetation prior to termination of coverage; and

b. Stabilizing disturbed topsoil during construction.

II.C.2. Preserving existing topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.[1]

II.D. Erosion Control

II.D.1. Dischargers shall implement the following practices to eliminate or minimize site erosion. Erosion control BMPs (with the exception of sprayed products) shall be available on-site, or at a nearby location (e.g., common lay-down yard), year-round with trained persons able to deploy the product under the direction of the Qualified SWPPP Practitioner:

a. Implement effective wind erosion controls;

b. Preserve existing vegetation;

c. Minimize the amount of soil exposed during construction activity;

d. Minimize the disturbance of steep slopes;

e. Schedule earthwork to minimize the amount of disturbed area when feasible;

f. Immediately initiate stabilization for disturbed areas whenever earth disturbing has permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days;[2]

g. Minimize soil compaction in areas other than where the intended function of a specific area dictates that it be compacted;

h. Reestablish vegetation or non-vegetative erosion controls as soon as practicable;

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1 Examples may include the removal of topsoil containing invasive seedbanks, lack of space to stockpile topsoil, and sites that are designed to be highly impervious after construction with little to no vegetation intended to remain.

2 In arid, semiarid, and drought-stricken areas where initiating vegetative stabilization measures immediately is infeasible, alternative stabilization measures shall be employed as specified by the Regional Water Board. Stabilization shall be completed within a period of time determined by the Regional Water Board. In limited circumstances stabilization may not be required if the intended function of a specific area of the site necessitates that it remains disturbed.

i. If feasible, divert up gradient run-on water from contacting areas of exposed soils disturbed by construction activities or convey run-on through the site in a manner that prevents erosion from areas of construction and does not compromise the effectiveness of erosion, sediment, and perimeter controls;

j. Run-on water flowing onto a site from off-site areas may be separated from a site's stormwater discharge to eliminate commingled contribution. Run-on diversion shall occur prior to entering an area affected by construction activity. Run-on flow diversion shall be conveyed through or around the construction activity in plastic pipe or an engineered conveyance channel in a manner that will not cause erosion due to flow diversion. Run-on combined with a site's stormwater discharge is considered a stormwater discharge;

k. Limit the use of plastic materials when more sustainable, environmentally-friendly alternatives exist. Where plastic materials are deemed necessary, the discharger shall consider the use of plastic materials resistant to solar degradation;

l. Control stormwater and non-stormwater discharges to minimize downstream channel and bank erosion; and

m. Control peak flowrates and total volume of stormwater and authorized non-stormwater discharges to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.

II.D.2. Dischargers that stabilize soil using bonded-fiber matrices, hydromulches, spray tackifiers, or other land-applied products shall:

a. Apply the product according to the manufacturer's instructions and guidance; and

b. Apply the product according to the manufacturer's guidance to allow for ample cure time and to prevent treatment chemicals from being transported by runoff.

II.E. Sediment Controls

II.E.1. Dischargers shall implement the following site sediment controls:

a. Establish and maintain effective perimeter controls;

b. Stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from the site;

c. Design, install, and maintain effective sediment controls to minimize the discharge of pollutants utilizing site-specific BMPs; and

d. Design sediment basins and impoundments according to the California Stormwater Quality Association's (CASQA) current Construction BMP

Guidance Handbook[3] and utilize outlet structures that withdraw water from the surface, unless infeasible. Linear project dischargers utilizing sediment basins shall complete installation prior to other land disturbance activities unless infeasible.

II.F. Additional Linear Underground and Overhead Project Type 2 and 3 Requirements

II.F.1. At Risk Type 2 and 3 sites, dischargers shall implement the following additional erosion and sediment control BMPs for areas under active construction:[4]

a. Design and construct cut and fill slopes in a manner to ensure slope stability and to minimize erosion including, but not limited to, these practices:

i. Reduce continuous slope-length using terracing and diversions;

ii. Reduce slope steepness; and

iii. Roughen slope surfaces with large cobble or track walking.

b. Install linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes according to sheet flow lengths as shown in Table 1 until slope has reached Notice of Termination conditions for erosion protection. When infeasible to comply with Table 1 due to site-specific geology or topography, the Qualified SWPPP Developer shall include in the SWPPP a justification for the use of an alternative method to protect slopes from erosion and sediment loss.

Table 1 - Critical Slope and Sheet Flow Length Combinations for Linear Sediment Reduction Barrier

Slope Ratio (Vertical to Horizontal)	Sheet flow length not to exceed
≤ 1:20	Per Qualified SWPPP Developer's specification.
> 1:20 to ≤ 1:4	35 feet
> 1:4 to ≤ 1:3	20 feet
> 1:3 to ≤ 1:2	15 feet
> 1:2	10 feet

3 California Stormwater Quality Association (CASQA), Construction BMP Handbook (January 2015), <https://www.casqa.org/sites/default/files/casqa-handbook-construction/master_hanbook_file_2015_sec.pdf> [as of May 20, 2021] (CASQA Construction BMP Handbook)

4 Active areas of construction are areas undergoing land surface disturbance and associated site areas included in the SWPPP. This includes construction activity during the preliminary phase, mass grading phase, streets and utilities phase, and the vertical construction phase.

II.F.2. Risk Type 2 and 3 dischargers shall limit construction activity traffic to and from the project to entrances and exits that employ effective controls to prevent off-site tracking of sediment.

II.F.3. Risk Type 2 and 3 dischargers shall maintain and protect all storm drain inlets, perimeter controls, and BMPs at entrances and exits (e.g., tire wash off locations).

II.F.4. Risk Type 2 and 3 dischargers shall remove any excess sediment or other construction activity-related materials that are deposited on the impervious roads by vacuuming or sweeping prior to any precipitation event.

II.F.5. Risk Type 2 and 3 dischargers shall implement additional site-specific sediment controls upon written request by the Regional Water Boards when the implementation of the other requirements in this Section are determined to inadequately protect the site's receiving water(s).

II.G. Surface Water Buffer[5]

II.G.1. Linear project dischargers shall provide and maintain natural buffers and/or equivalent erosion and sediment controls when a water of the United States is located within 50 feet of the site's earth disturbances, unless infeasible.

II.G.2. Linear project dischargers shall comply with one of the following alternatives for any discharges to waters of the United States located within 50 feet of a site's earth disturbances:

a. Provide and maintain a 50-foot undisturbed natural buffer, from the edge of the disturbed area to the top of bank;

b. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer. The equivalent sediment load may be calculated using the Revised Universal Soil Loss Equation, Volume 2 (RUSLE2) model or another method approved by the Regional Water Board; or

c. Implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer when it is infeasible to provide and maintain an undisturbed natural buffer of any size. The equivalent sediment load may be calculated using RUSLE2 or another method approved by the Regional Water Board.

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5 The surface water buffer requirements apply to work above the top-of-bank or high-water level of waters of the United States. Work within a channel or streambed (water body-dependent construction), Clean Water Act § 404 projects with § 401 certification, and projects where no natural surface buffer exists (e.g., concrete channelization) are exempt from the requirements. All types of in-channel work may be regulated under Section 401 (Clean Water Act - Regional Boards), Section 404 (Clean Water Act - Army Corps of Engineers), or Section 1602 (California Fish and Game Code).

II.H. Pesticide Application

Linear project dischargers shall only apply pesticides that have been authorized for use through California Department of Pesticide Regulation. The application of pesticides shall follow manufacturer's guidance.

II.I. Demolition of Existing Structure

Linear project dischargers shall prevent demolition materials from being exposed to precipitation. Demolition materials should be covered with an impermeable barrier such as, but not limited to, plastic sheeting prior to precipitation to prevent known contaminants from being mobilized. Dischargers unable to cover demolished material that were not previously investigated or found to be absent of applicable pollutants in reportable quantities shall sample for any non-visible pollutants that may be in stormwater discharges that may be present such as, but not limited to, asbestos, leaded paint, or poly chlorinated biphenyls (PCBs)[6].

II.J. Maintenance and Repair

II.J.1. Linear project dischargers shall begin maintaining, repairing, and/or implementing design changes (reviewing alternatives that have not been used yet) to BMPs within 72 hours of identification of failures or other short comings, and complete the changes as soon as possible, prior to the next forecasted precipitation event.

II.J.2. Linear project dischargers shall have a Qualified SWPPP Practitioner (QSP) verify all BMP maintenance and repairs were appropriately implemented during the next visual inspection following completion. The QSP may delegate BMP maintenance and repair verification to an appropriately trained delegate.

III. MONITORING REQUIREMENTS

III.A. General Requirements

Linear project dischargers shall implement the Construction Site Monitoring Program in compliance with this Section at the time of the commencement of construction activity and shall continue implementation until the project is complete and the project site is stabilized as defined in Section III.H in the Order.

The monitoring requirements of this Section are issued pursuant to Water Code § 13383 and specify monitoring requirements for linear project dischargers subject to this Order.

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6 PCBs were used between January 1, 1950 and January 1, 1980 and should be considered to be potentially present in structures built during that timeframe. "Structure", in this instance, shall have been constructed with floor space (such as a building).

III.B. Monitoring Exceptions

III.B.1. Linear project dischargers shall conduct visual inspections and collect samples to meet the requirements of this Attachment. Dischargers are not required to physically conduct visual inspections or collect samples under the following conditions:

a. During dangerous weather conditions such as electrical storms, flooding, and high winds above 40 miles per hour;

b. Outside of scheduled site operating hours; or

c. When the linear project site is not accessible to personnel.

III.B.2. For linear project sites that are inactive, the discharger may reduce the visual inspection frequency and suspend sampling per Section III.G of the Order.

III.B.3. Linear project dischargers shall provide an explanation with supporting information for all missed visual inspections or sampling required by this Attachment, to be included in the Annual Report.

III.C. Visual Inspection Requirements

III.C.1. Linear project dischargers shall perform visual inspections, based on their Risk Type, in accordance with Table 2 below. The purpose of the visual inspections is to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Except as specified in Section III.C.3 below, inspectors shall be the Qualified SWPPP Developer, Qualified SWPPP Practitioner, or be trained by the Qualified SWPPP Practitioner.

Table 2 – Visual Inspection Schedule[7]

Linear Underground and Overhead Project Type	Weekly	Pre-Qualifying Precipitation Event	During Qualifying Precipitation Event	Post-Qualifying Precipitation Event
1	**X**	**X**	**X**	**Not Applicable**
2	**X**	**X**	**X**	**X**
3	**X**	**X**	**X**	**X**

III.C.2. Linear project dischargers shall conduct weekly visual inspections to ensure that BMPs are properly installed and maintained. A pre-, during, or post-qualifying precipitation event inspection satisfies the weekly visual inspection requirement.

7 This table is limited to routine weekly inspections and Qualifying Precipitation Event related inspections. Other visual inspections may be required under this Permit and are described in the applicable sections.

III.C.3. Linear project dischargers shall have a QSP conduct a pre-Qualifying Precipitation Event inspection within 72 hours prior to any weather pattern that is forecasted to have a 50 percent chance of 0.5 inches or more in a 24-hour period. Precipitation forecast information shall be obtained from the National Weather Service Forecast Office (e.g., by entering the zip code of the project location at https://www.weather.gov/) and shall be included as part of the inspection checklist weather information. If extended forecast precipitation data (greater than three days) is available from the National Weather Service, the pre-precipitation event inspection may be done up to 120 hours in advance. The pre-Qualifying Precipitation Event inspection shall include an inspection of the following:

a. All stormwater drainage areas to identify leaks, spills, or uncontrolled pollutant sources and when necessary, implement appropriate corrective actions to control pollutant sources;

b. All BMPs to identify whether they have been properly implemented in accordance with the SWPPP and when necessary, implement appropriate corrective actions to control pollutant sources; and

c. All stormwater storage and containment areas to detect leaks and check for available capacity to prevent overflow.

III.C.4. Dischargers shall conduct daily visual inspections at least once every 24-hour period during Qualifying Precipitation Events. Qualifying Precipitation Events are extended for each subsequent 24-hour period forecast to have at least 0.25 inches of precipitation.

III.C.5. Risk Type 2 and 3 dischargers* shall conduct post-Qualifying Precipitation Event visual inspections within 96 hours after each Qualifying Precipitation Event if 0.5 inches or more precipitation is measured during the duration of the Qualifying Precipitation Event using the onsite rain gauge. The 96-hour time frame may include the two consecutive 24-hour periods with less than 0.25 inches forecast, which mark the end of the precipitation event. The inspection is to:

a. Identify if BMPs were adequately designed, implemented, and effective;

b. Identify BMPs that require repair or replacement due to damage; and

c. Identify any additional BMPs that need to be implemented and revise the SWPPP accordingly.

III.C.6. Linear project dischargers shall conduct all visual inspections during scheduled site operating hours.

III.C.7. For each required inspection, Linear project dischargers shall develop and complete an inspection checklist that, at a minimum includes:

* The July 22, 2022 draft Order was clear that this monitoring requirement applied to only Risk Type 2 and 3 dischargers. Change Sheet #2, which was circulated September 7, 2022, inadvertently did not reflect this limitation. The final Order has been corrected to reflect that this requirement applies only to Risk Type 2 and 3.

a. Inspection type (weekly, pre-precipitation, daily precipitation, or post-precipitation event);

b. Inspection date and time the inspection was conducted;

c. Weather information, including the presence or absence of precipitation, an estimate of the beginning of the Qualifying Precipitation Event, duration of the event, date of the Qualifying Precipitation Event, and the amount of precipitation in inches;

d. Site information, including stage of construction, activities completed since last inspection, and approximate area of the site exposed;

e. A description of any BMPs evaluated and any deficiencies noted, including those that may have resulted in the release of non-visible pollutants;

f. A list of the inspections of all BMPs inspected, including erosion controls, sediment controls, chemical and waste controls, and non-stormwater controls;

g. Report of the presence of any floating and suspended materials, odors, discolorations, visible sheens, and any sources of pollutants in discharges and contained stormwater;

h. Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates;

i. Photographs of areas of concern and the QSP's description of the problem, if any; and

j. Inspector's name, title, and certification, if any.

III.D. Water Quality Monitoring Requirements

Linear project dischargers shall collect samples of discharges, based on their Risk Type, in accordance with Table 3 and the requirements below, to monitor water quality and assess compliance with the requirements of this General Permit. Samplers shall be the Qualified SWPPP Developer, Qualified SWPPP Practitioner, or be trained by the Qualified SWPPP Practitioner.

Table 3 – Sample Collection Schedule

Linear Underground and Overhead Project Risk Type	Stormwater Discharge Sample Collection (when applicable)	Receiving Water Sample Collection (when applicable)	Non-Visible Sample Collection (when applicable)
1	**Not Applicable**	**Not Applicable**	**X**
2	**X**	**Not Applicable**	**X**
3	**X**	**X (Post-exceedance)**	**X**

III.D.1. Risk Type 2 and 3 Stormwater Discharge Monitoring Requirements

III.D.1.a. Risk Type 2 and 3 dischargers shall collect stormwater samples from sampling locations at one or more discharge locations representative of the project's construction activities, during discharge and within site operating hours. The samples shall be representative of the discharge flow and characteristics.

III.D.1.b. Risk Type 2 and 3 dischargers shall obtain one sample from each representative sample location per 24-hour period of each qualifying precipitation event, during active discharge.

III.D.1.c. Risk Type 2 and 3 dischargers shall collect samples of stored or contained stormwater during discharge from the impoundment, in accordance with Attachment J.

III.D.1.d. Risk Type 2 and 3 dischargers shall analyze all their effluent samples for:

i. pH and turbidity (refer to Order, Section IV.C.3.c and d); and

ii. Additional parameter required by the Regional Water Board Executive Officer.

III.D.1.e. Risk Type 2 and 3 dischargers may sample run-on from surrounding areas if there is reason to believe run-on may contribute to exceedance of numeric action levels and/or numeric effluent limits.

III.D.2. Risk Type 3 Receiving Water Monitoring Requirements

III.D.2.a. Risk Type 3 dischargers who discharge directly into receiving waters are required to monitor that receiving water if sampling results from the discharge monitoring location meets either of the following conditions:

i. pH value falls outside of the range of 6.0 and 9.0 pH units; or

ii. Turbidity exceeds 500 NTU.

III.D.2.b. Receiving water monitoring does not apply if run-on from a forest fire or any other natural disaster caused the stormwater results to fall outside the pH range or exceed the turbidity value.

III.D.2.c. Risk Type 3 dischargers required to conduct receiving water monitoring shall collect samples as follows:

i. Collect, at minimum, one upstream receiving water sample from an accessible and safe location that is:

1. Representative of the receiving water;

2. As close as possible to the discharge location; and

3. Upstream from the discharge location.

ii. Collect, at minimum, one downstream receiving water sample from an accessible and safe location that is:

1. Representative of the receiving water;

2. As close as possible to the discharge location; and
3. Downstream from the discharge location.

III.D.2.d. Risk Type 3 dischargers shall analyze the samples for the parameter that triggered this monitoring (either pH or turbidity, or both).

III.D.2.e. Risk Type 3 dischargers shall collect the samples once every 24-hour period of the qualifying precipitation event.

III.D.2.f. Risk Type 3 dischargers shall specify the specific locations where samples were collected, date and time of sample collection, as well as constituents analyzed.

III.D.2.g. The Regional Water Board Executive Officer delegate may require, in writing, that the discharger continue to sample the receiving water for the parameter that required this monitoring (pH and/or turbidity) after the qualifying precipitation event ends.

III.D.3. Non-Visible Pollutant Monitoring Requirements

III.D.3.a. Linear project dischargers shall implement sampling and analysis requirements to monitor non-visible pollutants associated with:

i. Evidence of pollutant releases that are not visually detectable in stormwater discharges; and

ii. Releases of substances that may cause or contribute to an exceedance of water quality objectives in the receiving waters.

III.D.3.b. Linear project dischargers are required to conduct sampling and analysis for non-visible pollutants identified in the SWPPP or otherwise known to be on site, only when the pollutants may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

III.D.3.c. Linear project dischargers shall collect at least one sample, within 8 hours, from each discharge location hydraulically downgradient from the observed triggering event or condition.

III.D.3.d. Linear project dischargers shall continue to collect at least one sample per applicable discharge location for each 24-hour period that there is discharge, until the necessary corrective actions are completed to control further discharge of the pollutant.

III.D.3.e. Linear project dischargers are not required to sample if one of the conditions described in Section III.D.3.b above (e.g., breach or spill) occurs and, prior to discharge, the material containing the pollutant is fully remediated or removed; and BMPs to control the pollutant are implemented, maintained, or replaced as necessary.

III.D.3.f. Linear project dischargers shall analyze samples in the field or submit them to a laboratory as specified in Section III.F of this Attachment for all non-visible pollutant anticipated to be present in the discharge, including applicable TMDL-specific pollutants listed in Table H-2 in Attachment H.

III.E. Sample Collection and Handling Instructions

III.E.1. Linear project dischargers shall:

a. Identify applicable parameters that require laboratory analysis to be tested for each stormwater discharge location (pH and turbidity are typically analyzed with field meters).

b. Request the laboratory provide the appropriate number of sample containers, types of containers, sample container labels, blank Chain of Custody forms, and sample preservation instructions.

c. Use the appropriate sample shipping method to the laboratory. The laboratory should receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory to meet all method hold times). The options are to either deliver the samples to the laboratory, arrange to have the laboratory pick them up, or ship them overnight to the laboratory.

d. Use only the sample containers provided/specified by the laboratory to collect and store samples. Use of any other type of containers could cause sample contamination.

e. Prevent sample contamination by not touching or putting anything into the sample containers before collecting stormwater samples.

f. Not overfill sample containers. Overfilling can change the analytical results.

g. Secure each sample container cap is tightly secured without stripping the cap threads.

h. Label each sample container. The label shall identify the date and time of sample collection, the person taking the sample, and the sample collection location or discharge point. The label should also identify any sample containers that have been preserved.

i. Carefully pack sample container into an ice chest or refrigerator to prevent breakage and maintain temperature during shipment; frozen ice packs or ice is placed into the shipping container to keep sample close to 4° C (39° F) until arriving at the laboratory (do not freeze samples).

j. Complete a Chain of Custody form with each set of samples. The Chain of Custody form shall include the discharger’s name, address, and phone number, identification of each sample container and sample collection point, person collecting the samples, the date and time each sample container was filled, the analysis that is required for each sample container, and both the signatures of the persons relinquishing and receiving the sample containers.

III.E.2. Personnel for Linear project dischargers shall be designated and trained for the collection, maintenance, and shipment of samples in accordance with the above sample protocols and laboratory-specific practices.

III.E.3. Linear project dischargers shall perform all sampling and preservation protocols in accordance with the 40 Code of Federal Regulations Part 136 and the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association).[8]

III.E.4. Linear project dischargers may refer to Surface Water Ambient Monitoring Program's (SWAMP) Quality Assurance Program Plan (QAPrP) for more information on sampling collection and analysis.[9]

III.F. Analytical Methods Requirements

III.F.1. Linear project dischargers shall refer to Table 4 for applicable test methods, detection limits, and reporting units.

Table 4 - Test Methods, Method Detection Limits, and Reporting Units

Parameter	Test Method	Discharger Risk Type	Method Detection Limit	Reporting Units
pH	Field test with calibrated portable instrument using U.S. EPA approved procedures	Type 2 and 3	0.2	pH units
Turbidity	U.S. EPA 0180.1 and/or field test with calibrated portable instrument	Type 2 and 3	1	NTU
Non-Visible Pollutant Parameter(s)	U.S. EPA-approved test method for the specific pollutant parameter	All Types	Dependent on the test method	Dependent on the test method

III.F.2. All monitoring instruments and equipment shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. Additionally, records of calibration shall be retained for at least 3 years and made available upon request.

III.F.3. Risk Type 2 and 3 dischargers shall perform pH analysis on-site with a calibrated pH meter using a U.S. EPA acceptable test method.

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8 Unless other test procedures have been specified in this General Permit or by the Water Boards.

9 Additional information regarding SWAMP's QAPrP can be found at: <https://www.waterboards.ca.gov/water_issues/programs/swamp/quality_assurance.html#qaprp>. [as of October 20, 2020]

III.F.4. Risk Type 2 and 3 dischargers shall perform turbidity analysis using a calibrated turbidity meter (turbidimeter), either on-site or at a State Water Board Environmental Laboratory Accreditation Program (ELAP)-accredited laboratory. Acceptable test methods include Standard Method 2130 B or U.S. EPA Method 180.1.

III.F.5. All analyses of laboratory-analyzed parameters shall be sent to and conducted at a laboratory recognized by the State Water Board Environmental Laboratory Accreditation Program (ELAP), with the exception of field analysis conducted by the discharger for turbidity and pH.

III.F.6. Linear project dischargers shall assign a value of (0) for all non-visible pollutant analytical results less than the minimum level (reporting limit), as reported by the laboratory, used in calculations required by this Order (e.g., numeric action level and numeric effluent limitation exceedance determinations), so long as a sufficiently sensitive test method was used as evidenced by the reported method detection limit and minimum level.

III.G. Exceedance Response Requirements[10]

III.G.1. Linear project dischargers are subject to the applicable numeric action levels and/or numeric effluent limitations based on the Risk Type as shown in Table 5 below.

Table 5 - Numeric Action Levels and Numeric Effluent Limitations

Parameter	Risk Type	Numeric Action Level	Numeric Effluent Limitation
pH	Type 2 and 3	Lower = 6.5 Upper = 8.5	Not Applicable
Turbidity	Type 2 and 3	250 NTU	Not Applicable
TMDL-related Pollutant	Responsible Dischargers with a project of any Risk Type	Refer to Table H-2 in Attachment H	Refer to Table H-2 in Attachment H

III.G.2. For pH and turbidity, the discharger shall use the field meter readings obtained from each discharge location per day of discharge to determine if there has been an exceedance of the numeric action levels.

III.G.3. When analytical results indicate that the discharge is below or above the numeric action levels for pH, exceeds the turbidity numeric action level, or exceeds an applicable TMDL-related numeric action level or numeric effluent

10 Terms including, but not limited to, numeric action level and exceedances are defined in Attachment B of this General Permit.

limitation, the discharger shall determine the source(s) of the pollutant and implement corrective actions to:

a. Meet Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology requirements in 40 Code of Federal Regulations §§ 450.21 through 450.23[11]; and

b. Reduce or prevent pollutants in stormwater and authorized non-stormwater discharges from causing further exceedances.

III.G.4. Linear project dischargers shall iterate corrective actions until the discharge is in compliance with the applicable numeric action level(s).

III.G.5. The source evaluation shall be kept with the SWPPP and specifically address what corrective actions were taken or will be taken and provide a schedule for their completion.

IV. LINEAR PROJECT REPORTING REQUIREMENTS

IV.A. Visual Inspections

Linear project dischargers shall keep all completed inspection checklists and related documentation with the SWPPP on-site or electronically.

IV.B. Water Quality Monitoring

IV.B.1. Risk Type 2 and 3 Stormwater Discharge Monitoring Reporting[12]

IV.B.1.a. Risk Type 2 and 3 dischargers shall electronically submit through SMARTS all field sampling results within 30 days of the completion of the precipitation event or within 10 days if the field sampling results demonstrate the exceedance of the pH and/or turbidity numeric action levels.

IV.B.1.b. Risk Type 2 and 3 dischargers that exceeded the pH and/or turbidity numeric action levels shall prepare a Numeric Action Level Exceedance Report when requested, in writing, from a Regional Water Board delegate and shall submit and certify each Numeric Action Level Exceedance Report through SMARTS within 30 days of receiving the written request, in accordance with Section IV of this General Permit's Order.

IV.B.1.c. The Numeric Action Level Exceedance Report shall include:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) of each parameter;

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11 United States Environmental Protection Agency, Construction and Development Effluent Limitation Guidelines §§ 450.21 through 450.23, <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N/part-450/subpart-B?toc=1> [as of June 28, 2022].

12 Terms including, but not limited to, numeric action level and exceedances are defined in Attachment B of this General Permit.

ii. The date, place, time of sampling, visual inspections, and/or measurements, including precipitation; and

iii. An assessment of the existing BMPs associated with the sample that exceeded the numeric action level, a description of each corrective action taken including photographs, and date of implementation.

IV.B.1.d. Risk Type 2 and 3 dischargers that prepared a Numeric Action Level Exceedance Report shall retain a copy of the report for a minimum of three years after the date the exceedance report is certified and submitted.

IV.B.2. Risk Type 3 Receiving Water Monitoring Reporting

IV.B.2.a. Risk Type 3 dischargers conducting receiving water monitoring shall electronically submit through SMARTS all receiving water samples within 10 days after completion of the precipitation event.

IV.B.3. Non-Visible Pollutant Monitoring Reporting[13]

IV.B.3.a. All Linear project dischargers that conducted non-visible pollutant monitoring shall electronically submit through SMARTS all field and/or analytical sampling results within 30 days after obtaining the analytical result or within 10 days if the analytical results demonstrate the exceedance of an applicable TMDL-related numeric action level or numeric effluent limitation or Basin Plan parameter.

IV.B.3.b. All Linear project dischargers that exceeded an applicable TMDL-related numeric action level shall prepare a Numeric Action Level Exceedance Report when requested, in writing, from a Regional Water Board delegate and shall submit and certify each Numeric Action Level Exceedance Report through SMARTS within 30 days of receiving the written request, in accordance with Section IV of this General Permit's Order.

IV.B.3.c. The Numeric Action Level Exceedance Report shall include:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) for each parameter;

ii. The date, place, time of sampling, visual inspections, and/or measurements, including precipitation; and

iii. An assessment of the existing BMPs associated with the sample that exceeded the numeric action level, a description of each proposed corrective action taken, including photographs, and date of implementation.

13 Terms including, but not limited to, numeric action level, numeric effluent limitations, and exceedances are defined in Attachment B of this General Permit.

IV.B.3.d. All Linear project dischargers that prepared a Numeric Action Level Exceedance Report shall retain a copy of the report for a minimum of three years after the date the exceedance report is certified and submitted.

IV.B.3.e. All Linear project dischargers that exceed an applicable TMDL-related numeric effluent limitation shall comply with the water quality-based corrective action requirements in Section VI.Q of the Order.

ATTACHMENT E.1

LINEAR UNDERGROUND AND OVERHEAD PROJECT AREA OR SEGMENT AREA TYPE DETERMINATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

Part 1

1. Will ≥70 percent of the construction activity occur on paved surfaces or will <30 percent of the soil disturbance occur on unpaved surfaces?
   a. If Yes, proceed to question 2
   b. If No, proceed to question 3
2. Will areas disturbed be returned to pre-construction condition or equivalent condition at the end of each day?
   a. If Yes, this is a Project Type 1 Linear Underground and Overhead Project
   b. If No, proceed to Part 2 on page 2
3. Will the construction activity occur on unpaved improved roads, including shoulders or land immediately adjacent to the roads?
   a. If Yes, proceed to question 5
   b. If No, proceed to question 4
4. Will >30 percent of the construction activity occur within non-paved shoulders or land immediately adjacent to paved surfaces?
   a. If Yes, proceed to question 5
   b. If No, proceed to Part 2 on page 2
5. Will areas disturbed be returned to pre-construction conditions or equivalent conditions at the end of the day?
   a. If Yes, proceed to question 6
   b. If No, proceed to Part 2 on page 2
6. Will areas of established vegetation disturbed by the construction activity be stabilized and revegetated by the end of the project?
   a. If Yes, proceed to question 7
   b. If No, proceed to Part 2 on page 2

7. When required, will adequate temporary stabilization BMPs be installed and maintained until vegetation is established to meet minimum vegetative cover requirements in this Order for stabilization?
   a. If Yes, this is a Project Type 1 Linear Underground and Overhead Project
   b. If No, proceed to Part 2 on page 2

Part 2

1. Calculate the Sediment Risk per Attachment D.1 or the Stormwater Multiple Application and Report Tracking System (SMARTS).

   Project Sediment Risk =

   LOW: <15 tons per acre; or

   MEDIUM: ≥15 and <75 tons per acre; or

   HIGH: ≥75 tons per acre

2. Is the project area or project segment area located within a Sediment Sensitive Watershed (refer to Attachment D.1 or SMARTS)?
   a. If Yes, proceed to question 3*
   b. If No, Receiving Water Risk is LOW
3. Is the project area or segment located within the flood plain or a flood prone area (riparian zone) of a Sensitive Receiving Water Body?
   a. If Yes, Receiving Water Risk is HIGH
   b. If No, Receiving Water Risk is MEDIUM

Use the combined risk matrix below to determine the site-specific type for the linear underground and overhead project.

* The July 22, 2022 draft Order stated “If Yes, proceed to question 10.” This error has been corrected in the final Order to “If Yes, proceed to question 3.”

		Sediment Risk		
		LOW	MEDIUM	HIGH
Receiving Water Risk	LOW	Type 1	Type 1	Type 2
	MEDIUM	Type 1	Type 2	Type 3
	HIGH	Type 2	Type 3	Type 3

Definition of Terms

Equivalent Condition – Equivalent condition means disturbed soils such as soils from trench excavation required to be hauled away, backfilled into the trench, and/or covered (e.g., metal plates, pavement, plastic covers over spoil piles) at the end of each construction day.

Sediment Sensitive Receiving Water Body – A sediment sensitive receiving water body is defined as a water body segment that is:

- Listed as impaired on California's 2020-2022 Clean Water Act 303(d) List of Impaired Waters for sedimentation, siltation and/or turbidity; (https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html)

  OR

- Designated with beneficial uses of COLD, SPAWN, and MIGRATORY.

Sediment Sensitive Watershed – A sediment sensitive watershed is defined as a watershed draining into a receiving water body (or receiving water body reach):

- Listed as impaired on California's 2020-2022 Clean Water Act 303(d) List of Impaired Waters for sedimentation, siltation, and/or turbidity; (https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2020_2022_integrated_report.html)>

  OR

- Designated with beneficial uses of COLD, SPAWN, and MIGRATORY.

ATTACHMENT E.2

PERMIT REGISTRATION DOCUMENT REQUIREMENTS FOR LINEAR UNDERGROUND AND OVERHEAD PROJECTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

I. PERMIT REGISTRATION DOCUMENT REQUIREMENTS

All linear underground and overhead projects shall comply with the Permit Registration Document requirements in this Attachment and Attachments E and E.1 of this General Permit.

I.A. General Permit Registration Document Requirements

I.A.1. A discharger with construction activities associated with linear projects shall designate a Legally Responsible Person to electronically certify and submit Permit Registration Documents to apply for regulatory coverage under this General Permit through the Stormwater Multiple Application and Report Tracking System (SMARTS) in accordance with Attachment E and E.1 of this General Permit.

I.A.2. Linear Projects Associated with Private or Public Construction Projects

I.A.2.a. A discharger with a linear project with total disturbed land area from construction activities greater than one acre (see Section II.G below) shall obtain coverage under this General Permit.[1]

I.A.2.b. A discharger with linear project construction activities associated with new development and re-development construction projects shall obtain coverage under this General Permit for a linear project where the total disturbed land area of the linear project is greater than 1 acre.

I.A.3. Linear projects not associated with private or municipal pre-development, new development or re-development projects must obtain coverage under this General Permit for its linear project construction activities where the total disturbed land area is greater than one acre.

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1 Obtaining coverage means certifying and submitting complete Permit Registration Documents in SMARTS for the Linear Underground and Overhead Project. Dischargers or LRPs shall have a signed original Electronic Authorization Form on file with the State Water Board for each organization in SMARTS.

I.B. Linear Project Land Disturbance Area Calculations

I.B.1. The total land area disturbed for linear projects is the sum of the:

a. Surface areas of trenches, laterals, and ancillary facilities; plus

b. Area of the base of stockpiles on unpaved surfaces; plus

c. Surface area of the borrow area; plus

d. Areas of paved surfaces to be constructed for the project; plus

e. Areas of new roads constructed or areas of major reconstruction to existing roads (e.g., improvements to two-track surfaces or road widening) for the sole purpose of accessing construction activities or as part of the final project; plus

f. Equipment and material storage, staging, and preparation areas (laydown areas) not on paved surfaces; plus

g. Construction activities areas outside the surface area of trenches, laterals, and ancillary facilities that will be graded and/or disturbed by the use of construction equipment, vehicles, and machinery during construction activities.

I.B.2. Stockpiling Areas

I.B.2.a. Stockpiling areas, borrow areas, and the removal of soils from a linear project shall be included when calculating the area of disturbed soil for a site when:

i. The area of the base of stockpiled soil on-site or immediately adjacent to a linear project and the stockpile is not on a paved surface.

ii. The surface borrow areas that are on-site or immediately adjacent to a linear project.

iii. The area of the base of stockpiled soil that is hauled off-site to a location owned or operated by the discharger that is not a paved surface, except when the off-site location is already subject to a separate NPDES permit covering potential discharges to a waters of the United States.

iv. The surface area of the borrow pit for soil that is brought to the project from an off-site location owned or operated by the discharger except when the off-site location is already subject to a separate stormwater permit or greater than one fourth mile from the linear project.

I.B.2.b. Trench spoils on a paved surface that are either returned to the trench or excavation or hauled away from the project daily for disposal or reuse, will not be included in the disturbed area calculation.

I.C. Fees

I.C.1. A discharger must submit the appropriate fee with its completed Notice of Intent application package. Fees are established through regulations adopted by the State Water Board every year.[2] Fees are subject to change by regulation.

I.C.2. Where the fee is calculated based upon the total acreage of land disturbed (opposed to the total acreage of land owned), total acreage includes all areas anticipated to be disturbed throughout the duration of the project (e.g., 10 acres is scheduled to be disturbed the first year and 10 acres for four subsequent; the fees would be based upon 50 acres of total disturbance).

I.C.3. Dischargers that apply for and satisfy the Small Construction Rainfall Erosivity Wavier requirements shall pay the applicable fee.

I.D. Permit Registration Documents Submittal Prior to Commencement of Construction

I.D.1. Linear project dischargers proposing to conduct construction activities subject to this General Permit shall certify and submit Permit Registration Documents prior to the commencement of construction activity. Construction activity cannot commence until a Waste Discharge Identification (WDID) number is issued.

I.D.2. A linear project discharger with coverage under a Programmatic Notice of Intent shall certify and submit a Linear Construction Activity Notification for each non-contiguous linear project site prior to the start of construction.

I.D.3. In all cases, except public emergencies (e.g., wildfire, flood), Permit Registration Documents must be completed and WDID number issued before construction can commence (refer to Section III.A.3 of the Order of this General Permit).

I.E. Submittal of Complete Permit Registration Documents

All dischargers required to comply with this General Permit shall electronically certify and submit the required Permit Registration Documents, through the Stormwater Multiple Application and Report Tracking System (SMARTS). The discharger shall assure that all information in its Permit Registration Documents complies with the Homeland Security Act and other federal law addressing security in the United States.

The discharger shall submit completed Permit Registration Documents to obtain coverage under this General Permit. If any of the required items are incomplete or missing, the Permit Registration Documents submittal will be rejected.

The State Water Board will process the application package in the order received and assign a WDID number upon receipt of a complete Permit Registration Documents submittal. Permit coverage begins once a WDID number is assigned.

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2 California Code of Regulations (CCR), Title 23, Division 3, Chapter 9. Waste Discharge Reports and Requirements, Article 1. Fees.

II. STANDARD PERMIT REGISTRATION DOCUMENTS FOR ALL LINEAR PROJECT DISCHARGERS

II.A. Notice of Intent

II.A.1. A Notice of Intent is a project-specific application to obtain regulatory coverage for discharges of stormwater and authorized non-stormwater from construction activities to waters of the United States. The application includes the entry of site information, contact information, and Permit Registration Document-specific information requirements.

II.A.2. Per Order, Section III.B.4, a Programmatic Notice of Intent covers all sites, of similar scope, within a Regional Water Board boundary or statewide under a single common SWPPP. A regional programmatic Notice of Intent shall include the common SWPPP and contact information. A statewide programmatic Notice of Intent shall include the common SWPPP, contact information, the estimated total disturbed site acreage for the duration of the project, and an identification of the element of Executive Order N-73-20 directing the project. Disturbed acreage for linear project activities regulated under a separate Notice of Intent is excluded from the statewide programmatic permitting disturbed area.

For regional and statewide programmatic permit coverage, each specific site is required to submit a Linear Construction Activity Notification which shall describe site-specific information including:

a. Site name and/or reference number;

b. Site location;

c. Site-specific SWPPP map detailing pollutant sources and implemented BMPs;

d. Total disturbed site acreage;

e. Estimated start and end date;

f. Risk type determination and supporting documentation; and

g. Site contact information (name, phone number, address).

II.B. Risk Type Determination

All linear project dischargers are required to conduct a Risk Type Determination, where the site's overall risk is separated into sediment risk and receiving water risk. The discharger must utilize either the Water Board's standard risk determination (provided in SMARTS), a site-specific risk determination, or a combination of the two as described in Attachment E.1 of this General Permit.

II.B.1. The standard risk determination (Geographic Information Systems (GIS) Map Method) includes utilizing the following:

a. U.S. EPA Rainfall Erosivity (R) Factor Calculator website;

b. Sediment Risk Map tool; and

c. High-Risk Receiving Watershed Map tool.

II.B.2. The site-specific risk determination (Individual Method) includes utilizing the following:

a. U.S. EPA Rainfall Erosivity (R) Factor Calculator website;

b. Manually calculated soil erodibility (K) and length-slope (LS) factors;

c. 303(d) list of water bodies impaired for sediment; and

d. List of beneficial uses for the receiving water, found in Regional Water Quality Control Board Basin Plans.

II.B.3. Sites that discharge to an unlisted receiving water that is tributary to a sediment-sensitive waterbody, within the Hydrologic Unit Code 10 (HUC 10) watershed scale, are considered high receiving water risk sites.

II.B.4. The discharger may use a combination of the standard and site-specific risk determination methods to calculate the soil erodibility (K), length-slope (LS), sediment risk, and receiving water risk.

II.B.5. The discharger shall calculate the site's sediment risk and receiving water risk during all phases of construction activity (e.g., demolition and pre-development site preparation, grading and land development, streets and utilities, vertical construction, final landscaping, and site stabilization).

II.B.6. SMARTS will assign the higher Risk Type to the entire site for any site spanning two or more planning watersheds.

II.B.7. Sites, parcels, or individual lots that are part of a larger plan of development shall include the larger plan of development in Risk Type determination. The discharger shall include this determination in the Permit Registration Documents submittal.

II.B.8. Dischargers may request that the Regional Water Board revise the site-specific Risk Type determination values in SMARTS by providing the following information to the Regional Water Board:

a. A site-specific soils test (ASTM D-422)[3,4] certified by a California licensed professional engineer or geologist to determine the K factor used in the revised Risk Level determination. The soil testing must include the soil classification method used (e.g., Unified Soil Classification System);

b. A site-specific survey of the elevation change to determine the LS factor used in the revised Risk Type determination certified by a professional licensed by

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3 ASTM D-422 is the standard test method used for the quantitative determination of the distribution of particle sizes in soils.

4 Environmental Protection Agency, American Society for Testing and Materials (ASTM) Standards, <https://www.epa.gov/sites/default/files/2020-01/documents/sedc_2004-2005_append.pdf> [as of July 2022]

the California Board of Professional Engineers, Land Surveyors and Geologists for this work; and

c. A revised Risk Type determination manually calculated in accordance with Attachment E.1 of this General Permit.

II.C. Site Specific Stormwater Pollution Prevention Plan, Drawings, and Map

The SWPPP (including site-specific drawings and map) is a linear project-specific document developed for implementation of this General Permit. The SWPPP shall be developed by a Qualified SWPPP Developer and certified and submitted by each discharger with the other Permit Registration Documents.

II.D. Additional Permit Registration Document Requirements Related to Specific Projects

II.D.1. Dischargers who are proposing to implement active treatment systems shall also certify and submit in SMARTS:

a. A complete Active Treatment System Plan in accordance with Attachment F at least 14 days prior to the planned operation of the active treatment system, and a copy shall be available on-site during active treatment system operation;

b. The system design and supporting documentation; and

c. Proof that the system and/or Active Treatment System Plan was designed by a qualified active treatment system professional in accordance with Attachment F.

II.D.2. Dischargers who are proposing to implement passive treatment shall certify and submit in SMARTS:

a. A complete Passive Treatment Plan in accordance with Attachment G at least 14 days prior to the planned operation of the passive treatment system, and a copy shall be available on-site during operation;

b. The system design and any supporting documentation; and

c. Proof that the Passive Treatment Plan and/or system was designed by an appropriate licensed professional (see Attachment G).

II.D.3. Dischargers who are proposing an alternate Risk Justification shall include:

a. Soil type identification through laboratory analysis, certified by a CBPELSG[5] license holder; and

b. Site slope determination topographic survey certified by a CBPELSG license holder.

5 California Board of Professional Engineers, Land Surveyors, and Geologists

II.D.4. Dischargers with linear projects applying for programmatic permitting shall use SMARTS to apply, manage, submit, and certify Permit Registration Documents.

II.E. Certification of Submitted Documents

The Legally Responsible Person (LRP) shall certify and submit all Permit Registration Documents required by this General Permit through SMARTS. The discharger's LRP shall have a signed original Electronic Authorization Form on file with the State Water Board for each organization in SMARTS.

II.F. Exceptions to Standard Permit Registration Document Requirements

Dischargers with a valid Small Construction Rainfall Erosivity Waiver for a linear project are not required to submit a SWPPP (including site-specific drawings and map).

II.G. Projects and Activities Not Subject to Coverage Under This General Permit

II.G.1. Coverage under this General Permit is not required where stormwater discharges from the same linear project construction activities are covered by another NPDES permit. Other discharges from construction activities that are covered under this General Permit can be found in the General Permit Order Section II if not specified below.

II.G.2. Linear project construction activity does not include routine maintenance projects to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. Routine maintenance projects are projects associated with operations and maintenance activities that are conducted on existing lines and facilities and within existing right-of-way, easements, franchise agreements or other legally binding agreements of the discharger. Routine maintenance projects include, but are not limited to projects that are conducted to:

a. Maintain the original purpose of the facility, or hydraulic capacity.

b. Update existing lines[6] and facilities to comply with applicable codes, standards, and regulations regardless of if such projects result in increased capacity.

c. Repairing leaks.

II.G.3. Routine maintenance does not include:

a. Construction of new lines[7] or facilities resulting from compliance with applicable codes, standards, and regulations.

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6 Update existing lines includes replacing existing lines with new materials or pipes.

7 New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.

b. Areas of maintenance projects that are outside of an existing right-of-way, franchise, easements, or agreements, or those temporary facilities (e.g., laydown or staging yards) located outside the existing right of way that directly support conductance of maintenance activity. When a linear project acquires new areas, those areas are subject to this General Permit based on the area of construction activity, material storage, vehicle staging, etc., outside the original right of way.

c. Temporary facilities (e.g., laydown or staging yards) that are shared between maintenance (i.e., inside the existing right of way) and areas on a maintenance project (i.e., outside the existing right of way) are subject to this General Permit when the new area (staging/maintenance yard and linear project) has one or more acres of construction activity.

II.G.4. Linear project construction activity does not include field activities associated with the planning and design of a project (e.g., activities associated with route selection).

II.G.5. Tie-ins conducted immediately adjacent to “energized” or “pressurized” facilities by the discharger are not considered small construction activities where all other linear project construction activities associated with the tie-in are covered by a Notice of Intent and SWPPP of a third party or municipal agency.

II.G.6. Miscellaneous connections to the linear projects that are conducted after all other soil disturbing activities are completed, and the total construction activity remains less than one acre.

II.H. Assistance

Dischargers and discharger representatives may email the State Water Board, Stormwater Help Desk, at stormwater@waterboards.ca.gov, for assistance with Permit Registration Documents.

ATTACHMENT F

ACTIVE TREATMENT SYSTEM REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

A. GENERAL ACTIVE TREATMENT SYSTEM REQUIREMENTS

A.1. The discharger choosing to implement an active treatment system on its site shall comply with all the requirements in this Attachment.

A.2. Active treatments systems are treatment technologies that employ chemical coagulation, chemical flocculation, or electrocoagulation to reduce turbidity caused by fine suspended sediment, and/or to control pH levels. An active treatment system relies on enclosed computerized systems with pumps, filters, and real-time controls.

A.3. The discharger shall assign a lead person (or project manager) who has either a minimum of five years construction stormwater experience or who is a licensed contractor specifically holding a California Class A Contractors license[1] to oversee the operation of the active treatment system.

A.4. An active treatment system may be bypassed if the discharger has met the following conditions:

a. The discharger demonstrates all discharges from the watershed area that the active treatment system was designed to treat are in compliance with the numeric action levels, numeric effluent limitations, and receiving water limitations established by this General Permit through the applicable monitoring requirements in Attachments D or E; and

b. If dewatering is occurring as part of the bypass, the discharger shall comply with the dewatering requirements in Attachment J.

A.5. The discharger shall comply with applicable local pre-treatment requirements per the local sanitation agency if the active treatment system effluent is locally authorized to be discharge into a sanitary sewer system. The discharger shall include proof of authorization and specific criteria required by the local sanitation agency in its Active Treatment System Plan.

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1 Business and Professions Code Division 3, Chapter 9, Article 4, Class A Contractor: A general engineering contractor is a contractor whose principal contracting business is in connection with fixed works requiring specialized engineering knowledge and skill. Web. <http://www.cslb.ca.gov/About_Us/Library/Licensing_Classifications/A_-_General_Engineering_Contractor.aspx>. [as of May 20, 2021].

B. DESIGN CRITERIA AND SPECIFICATIONS

B.1. Design Criteria

B.1.a. The active treatment system shall be designed to capture and treat (within a 72-hour period) a volume equivalent to the runoff from a 10-year, 24-hour storm event using a watershed coefficient of 1.0.

B.1.b. The watershed runoff coefficient used to size the active treatment system shall be 1.0.

B.1.c. All discharges from the active treatment system must comply with numeric effluent limitations as specified in Section D.4 below.

B.1.d. Runoff in excess of the design storm used to size the active treatment system shall not be routed through the active treatment system and must meet the bypass requirements in Section A.4, above.

B.1.e. The discharger shall design the active treatment system to preclude the discharge of treatment chemicals or settled floc[2] from the system.

B.1.f. The discharger shall design outlets to dissipate energy from concentrated flows.

B.1.g. The discharger shall design the bypass conveyance to dissipate energy from concentrated flows.

B.2. Treatment Chemicals for Coagulation and Flocculation

B.2.a. The discharger shall select, for use within the active treatment system, treatment chemical(s) capable of complying with the technology-based numeric effluent limitations by using one of the following methods:

i. The discharger shall conduct, at minimum, six site-specific jar tests (per treatment chemical with one test serving as a control) for each site to determine the proper treatment chemical and dosage levels for their active treatment system. The discharger shall conduct the jar tests using water samples that represent typical site conditions and in accordance with the current version of ASTM D2035.[3]

ii. Single field jar tests may also be conducted during a project if conditions warrant; an example includes, if construction activities disturb changing types of soils, which consequently cause change in stormwater and runoff characteristics.

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2 Floc is defined as a clump of solids formed by a chemical action.

3 ASTM D2035 is the standard test practice used for coagulation-flocculation jar testing of water, which assists in the evaluation of a treatment to reduce dissolved, suspended, colloidal, and nonsettleable matter in water via chemical coagulation-flocculation.

B.3. Filtration

B.3.a. The active treatment system shall include a filtration step between the coagulant treatment train and the effluent discharge. This is commonly provided by sand, bag, or cartridge filters.

B.3.b. The discharger shall remove, dispose of, or recirculate (to the beginning of the treatment process) all backwash water.

B.4. Instrumentation

B.4.a. The active treatment system shall be equipped with instrumentation that automatically measures and records effluent water quality data and flow rate.

B.4.b. The minimum data recorded shall be consistent with the monitoring and reporting requirements below, and shall include:

i. Influent turbidity;

ii. Effluent turbidity;

iii. Influent pH;

iv. Effluent pH;

v. Residual chemical;

vi. Effluent flow rate;

vii. Effluent flow volume;

viii. Total volume; and

ix. Freeboard on storage.

B.4.c. Systems shall be equipped with a data recording system, such as data loggers or webserver-based systems, which records each measurement on a frequency no longer than once every 15 minutes.

B.4.d. Cumulative flow volume shall be recorded daily. The data recording system shall have the capacity to record a minimum of seven days continuous data.

B.4.e. Instrumentation systems shall be interfaced with system control to provide auto shutoff or recirculation in the event that effluent measurements exceed turbidity or pH numeric action levels or numeric effluent limitations.

B.4.f. The system shall also assure that upon system upset, power failure, or other catastrophic event, the active treatment system will default to a recirculation mode or safe shut down.

B.4.g. Instrumentation (flow meters, probes, valves, streaming current detectors, controlling computers, etc.) shall be installed and maintained per manufacturer’s recommendations, which shall be included in the discharger’s Quality Assurance/Quality Control plan.

B.4.h. The Quality Assurance/Quality Control plan shall specify calibration procedures and frequencies, instrument method detection limit or sensitivity verification, laboratory duplicate procedures, and other pertinent procedures.

B.4.i. The instrumentation system shall include a method for controlling coagulant or flocculant dose, to prevent potential overdosing. Available technologies include flow/turbidity proportional metering, periodic jar testing and metering pump adjustment, and ionic charge measurement controlling the metering pump.

C. ACTIVE TREATMENT SYSTEM MAINTENANCE REQUIREMENTS

C.1. Operation and Maintenance

C.1.a. The discharger shall operate and maintain the active treatment system in accordance with the site-specific Operation and Maintenance Manual.

C.1.b. The Operation and Maintenance Manual shall only be used in conjunction with appropriate site-specific design specifications that describe the system configuration and operating parameters.

C.2. Residuals Management

C.2.a. Sediment shall be removed from the storage or treatment cells as necessary to ensure that the cells maintain their required water storage, sediment storage, and settling zone capacity.

C.2.b. Handling and disposal of all solids generated during active treatment system operations shall be done in accordance with all local, state, and federal laws and regulations.

D. ACTIVE TREATMENT SYSTEM MONITORING REQUIREMENTS

D.1. Visual Observations

D.1.a. The discharger shall visually observe the active treatment system for proper performance during each day of operation, including but not limited to:

i. All instrumentation; and

ii. Filter loading to confirm that the final filter stage is functioning properly.

D.1.b. The discharger shall visually observe the active treatment system through either of the following two options:

i. A designated responsible person who is on-site at all times during treatment operations to visually observe all portions of the active treatment system.

OR

ii. An operator continuously monitoring the active treatment system off-site. The active treatment system must be able to conduct a safe shut down autonomously when the operator connection is lost and/or the system is discharging above levels specified by this Attachment. The active treatment system shall have redundant monitoring of dosing amounts, influent, and effluent pollutant monitoring. The system shall be able to perform self-diagnostics for safe system shut down when one or more sensors is not performing as desired. All data relevant to system operation shall be collected, monitored, and recorded.

D.2. Water Quality Monitoring

D.2.a. The discharger shall continuously monitor and record flow at not greater than 15-minute intervals for total volume treated and discharged.

D.2.b. The discharger shall continuously monitor and record influent and effluent pH at 15-minute intervals if not more frequently.

D.2.c. The discharger shall continuously monitor and record influent and effluent turbidity (expressed in NTU) at 15-minute intervals if not more frequently.

D.2.d. The discharger shall monitor and record the type and amount of chemical(s) used for pH adjustment, if any.

D.2.e. The discharger shall monitor and record the dose rate of chemical used in the active treatment system (expressed in mg/L) 15-minutes after startup and every eight hours of operation.

D.2.f. The discharger shall monitor the effluent for residual all chemical(s) and/or additive levels, performing monthly laboratory duplicates for residual coagulant analysis.

D.3. Residual Chemical and Toxicity Monitoring

D.3.a. The discharger shall utilize a residual chemical test method that has a method detection limit of 10 percent or less than the maximum allowable threshold concentration[4] for the specific coagulant in use and for the most sensitive species to the chemical used.

D.3.b. The discharger shall utilize a residual chemical test method that produces a result within one hour of sampling.

D.3.c. The discharger shall have a State Water Board Environmental Laboratory Accreditation Program (ELAP) accredited laboratory validate the selected residual chemical test is appropriate for the coagulant or flocculant used. Specifically, the laboratory will review the test protocol, test parameters, and the detection limit of the coagulant or flocculant. The discharger shall electronically certify and submit this documentation as part of the Active Treatment System Plan through SMARTS.

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4 The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. A typical MATC would be:

The MATC is equal to the geometric mean of the No Observed Effect Concentration and Lowest Observed Effect Concentration Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

D.3.d. The discharger shall operate the active treatment system in batch treatment mode if the discharger cannot utilize a residual chemical test method that meets the requirements above, Section D.3.a through D.3.c.

D.3.e. The discharger shall not cause adverse physical impacts on receiving waters through the use of active treatment system batch storage and treatment, including but not limited to, inadequate storage volume, sudden released of the batches, and improperly designed discharge points.

D.3.f. The discharger operating in batch treatment mode shall perform toxicity testing in accordance with the following:

i. The discharger shall initiate acute toxicity testing on effluent samples representing effluent from each batch prior to discharge.[5] All bioassays shall be sent to a laboratory accredited by the State Water Board Environmental Laboratory Accreditation Program.[6]

ii. Acute toxicity tests shall be conducted with the following species and protocols. The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, U.S. EPA-821-R-02-012" for Fathead minnow, *Pimephales promelas or* Rainbow trout, *Oncorhynchus mykiss* may be used as a substitute for Fathead minnow.

iii. All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the U.S. EPA test method for whole effluent toxicity testing.[7]

iv. All toxicity tests and analysis shall be consistent with statewide requirements for acute and chronic toxicity, including implementation requirements. See Toxicity Provisions.

D.4. Active Treatment System Numeric Effluent Limitation Requirements

D.4.a. Effluent at the point of discharge from the active treatment system shall comply with the technology-based numeric effluent limitations established for active treatment system.

D.4.b. Numeric effluent limitations for discharges from an active treatment system are listed below and in Table 1:

i. pH of all active treatment system discharges shall be within the range of 6.0 to 9.0.

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5 This requirement only requires that the test be initiated prior to discharge.

6 Addition information can be found on the ELAP webpage. <https://www.waterboards.ca.gov/drinking_water/certlic/labs/>

7 U.S. EPA. Whole Effluent Toxicity (WET). Web. <https://www.epa.gov/npdes/whole-effluent-toxicity-wet>. [as of May 20, 2021].

ii. Turbidity of all active treatment system discharges shall be less than 10 NTU for daily flow-weighted average of all samples and 20 NTU for any single sample.

iii. Residual Chemical shall be < 10 percent of Maximum Allowable Threshold Concentration[8] for the most sensitive species to the chemical used.

Table 1 – Numeric Effluent Limitations, Test Methods, Method Detection Limits, and Reporting Units for Active Treatment System Discharges

Parameter	Test Method	Method Detection Limit	Reporting Units	Numeric Effluent Limitation
pH	Field test with calibrated portable instrument	0.2	pH Units	Lower = 6.0 Upper = 9.0
Turbidity	EPA 0180.1 and/or field test with a calibrated portable instrument	1	NTU[9]	10 NTU for Daily Flow-Weighted Average & 20 NTU for Any Single Sample
Residual Chemicals	U.S. EPA-approved test method for the specific pollutant parameter	Less than 10 percent of MATC for most sensitive species to the chemical used	Dependent on the test method	Less than 10 percent of MATC for most sensitive species to the chemical used

D.4.c. If an analytical effluent sampling result is outside the range of pH numeric effluent limitations (i.e., is below the lower numeric effluent limitation for pH or exceeds the upper numeric effluent limitation for pH), exceeds the turbidity numeric effluent limitation, or exceeds the residual chemical numeric effluent limitation, the discharger shall cease discharge from the active treatment system and comply with the reporting requirements in Section E.3 of this Attachment.

8 The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

9 Nephelometric Turbidity Unit

D.4.d. Discharges from active treatment system shall comply with applicable numeric effluent limitations (above) unless the precipitation event causing the discharge is determined, after the fact, to be equal to or larger than the compliance precipitation event (expressed in inches of rainfall). The compliance precipitation event for active treatment system discharges is the 10-year, 24-hour storm, as determined using the National Weather Service's Hydrometeorological Design Studies Center Precipitation Frequency Data Server[10] or equivalent.

D.4.e. The discharger may resume operation of the active treatment system if corrective actions were implemented to prevent future exceedances of the numeric effluent limitations.

E. ACTIVE TREATMENT SYSTEM REPORTING REQUIREMENTS

E.1. Active Treatment System Plan

E.1.a. The discharger shall prepare an Active Treatment System Plan that combines the site-specific data and treatment system information required to safely and efficiently operate an active treatment system.

E.1.b. The Active Treatment System Plan shall be electronically certified and submitted through SMARTS as an attachment to the SWPPP, at least 14 days prior to the planned operation of the active treatment system, and a copy shall be available on-site during active treatment system operation.

E.1.c. At a minimum, the Active Treatment System Plan shall include:

i. Contact information of all personnel responsible for monitoring and maintaining the active treatment system;

ii. A map depicting the watershed area treated by the active treatment system, shown in acres;

iii. Specifications of any storage ponds, tanks, or other stormwater containment associated with the active treatment system;

iv. The treatment capacity of the active treatment system, defined as the number of hours needed to treat the captured volume from a given design storm (e.g., 5-year, 24-hour) using a watershed runoff coefficient of 1.0;

v. An Active Treatment System Operation and Maintenance Manual for all equipment that at minimum:

1. Covers the procedures required to install, operate, and maintain the active treatment system;[11]

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10 NOAA's National Weather Service. Web. https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html [as of May 20, 2022].

11 The operation and maintenance manual is typically in a modular format addressing generalized operating and maintenance procedures for each system-specific component.

2. Includes information for specific pumps, generators, control systems, and other equipment used to operate the active treatment system; and
3. Includes a failure plan that gives procedural details on when (failure indicators) and how to shut the system down (procedure), and who at the Regional Water Board to contact.

vi. A monitoring and sampling plan, including quality assurance and quality control documentation that at minimum specifies:

1. Calibration methods and frequencies for all system and field measurement instruments;
2. The methods for determining method detection limits for each residual coagulant measurement method;
3. Acceptable minimum method detection limits for each method, specific to individual coagulants; and
4. Specific procedures for monthly laboratory duplicates for residual coagulant analysis.

vii. An Active Treatment System Health and Safety Plan; and

viii. An Active Treatment System Spill Prevention and Response Plan.

E.2. Visual Observations

E.2.a. The discharger shall keep all completed inspections checklists and related documentation with the SWPPP on-site or electronically.

E.3. Water Quality Monitoring

E.3.a. At a minimum, every 30 days the Legally Responsible Person representing the discharger shall electronically certify and submit active treatment system field data through SMARTS.

E.3.b. The discharger shall report any indications of toxicity or other violations of water quality objectives to the appropriate regulatory agency as required by this General Permit.

E.3.c. The system operator shall immediately report any measurements exceeding water quality standards to the discharger, who shall notify the Regional Water Board.

E.3.d. Dischargers in violation of any of the active treatment system numeric effluent limitations shall electronically certify and submit through SMARTS the analytical results within 24-hours of obtaining the results.

E.3.e. The discharger shall electronically certify and submit a Numeric Effluent Limitation Violation Report in SMARTS with 14 days after the numeric effluent limitation exceedance has been identified for any monitoring data exceeding an applicable numeric effluent limitation in this General Permit.

E.3.f. The discharger shall include in the Numeric Effluent Limitation Violation Report:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as “less than the method detection limit”);

ii. The date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation; and

iii. An assessment of what caused the active treatment system to exceed the numeric effluent limitation, and the proposed corrective actions taken to prevent future exceedances.

E.3.g. The active treatment system dischargers shall report the on-site rain gauge reading and nearby governmental rain gauge readings for verification if an applicable numeric effluent limitation has been exceeded during a precipitation event equal to or larger than the compliance precipitation event.

ATTACHMENT G

REQUIREMENTS FOR THE USE OF PASSIVE TREATMENT TECHNOLOGIES

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH
CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

A. GENERAL PASSIVE TREATMENT TECHNOLOGIES REQUIREMENTS

A.1. The discharger choosing to implement passive treatment technologies (passive treatment) on their site shall comply with all requirements in this Attachment and this General Permit.

A.2. Passive treatment is the application of natural or synthetic chemicals and products to reduce turbidity in discharges through coagulation and flocculation. Passive treatment does not rely on computerized, enclosed systems with pumps, filters, and real-time controls. Passive treatment may include pumps where they are necessary to move water around the site.[1] This Attachment is for the use of water applied passive treatment products that remove suspended solids such as sediment from stormwater (e.g., liquid treatment chemicals, powders, slow-releasing solid blocks/socks) without using an active treatment system.

A.3. The discharger shall not use chemical treatment as a standalone Best Management Practice (BMP) for site erosion and sediment controls and shall maximize the use of non-chemical BMPs for site erosion and sediment controls.

A.4. The discharger shall employ a trained person knowledgeable in the principles and practices of passive treatment to oversee the product application or installation.

A.5. The discharger shall store products at the site in leak-proof containers with secondary containment kept under a storm-resistant shelter. The discharger shall follow the manufacturer's instructions for handling and storage.

A.6. The discharger shall use passive treatment in a manner that precludes the accidental discharge of passive treatment products during storage, application, and after being applied.

A.7. The discharger shall maintain a copy of the site-specific Passive Treatment Plan in the Stormwater Pollution Prevention Plan (SWPPP). This document shall be kept updated in the Stormwater Multiple Application and Report Tracking System

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1 U.S. EPA. Federal Register V 77. No 1. Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category. Web. January 3, 2012. <https://www.govinfo.gov/content/pkg/FR-2012-01-03/pdf/2011-33661.pdf>. [as of May 20, 2021].

(SMARTS) and on-site in compliance with the record retention requirements in the Standard Provisions of this General Permit (Section VI).

B. PASSIVE TREATMENT DESIGN AND TOXICOLOGY REQUIREMENTS

B.1. The use of cationic chemicals for passive treatment is not authorized by this General Permit. Cationic chemicals are only authorized for use in active treatment systems complying with the criteria in Attachment F of this General Permit. Anionic chemicals are authorized for use in passive treatment systems, typically consisting of polyacrylamides[2]. Passive treatment consisting of polyacrylamides must:

a. Be free of nonylphenol and nonylphenol ethoxylates, often used as surfactants in emulsion-based products. Emulsion-based products may contain surfactants and petroleum distillates that can be toxic to aquatic life;[3]

b. Be food grade (National Sanitary Foundation/American National Standards Institute) products, or contain less than 0.05 percent residual monomer by volume;[4]

c. Have a charge density between 10 and 55 percent by weight;

d. Have a molecular weight between 6 and 25 milligrams per mole; and

e. Be mixed and applied in accordance with Occupational Safety and Health Administration Safety Data Sheet requirements and the manufacturer's recommendations.

B.2. A California licensed Professional Engineer shall design the discharge location(s) from the area treated with passive treatment products (treatment zone) to dissipate energy from concentrated flows.

B.3. Stormwater treated with passive treatment products in a treatment zone prior to being discharged from the construction site shall pass through a sediment control

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2 Michigan Department of Environmental Quality, Water Resources Division, Technical Guidance for the Use of Polyacrylamide Products for Soil Erosion and Sedimentation Control (SESC). Web. November 2014. <https://www.michigan.gov/documents/deq/wb-stormwater-TechnicalGuidancePAMs_197048_7.pdf>. [as of May 20, 2021].

3 Michigan Department of Environmental Quality, Water Resources Division, Technical Guidance for the Use of Polyacrylamide Products for Soil Erosion and Sedimentation Control (SESC). Web. November 2014. <https://www.michigan.gov/documents/deq/wb-stormwater-TechnicalGuidancePAMs_197048_7.pdf>. [as of May 20, 2021].

4 The U.S. EPA. Support Document for the Third Six-Year Review of Drinking Water Regulations for Acrylamide and Epichlorohydrin. Web. December 2016. <https://www.epa.gov/sites/production/files/2016-12/documents/810r16019.pdf>. [as of May 20, 2021].

BMP (including, but not limited to, a sediment basin or trap) or filter (including, but not limited to, sand filter or geotextile bag) to settle or remove flocculants prior to discharge from the site.

B.4. The discharger shall include in the Passive Treatment Plan, current acute and chronic toxicological test data provided by the manufacturer, a laboratory employed by the manufacturer, or a third-party organization.

B.4.a. The methods for the acute toxicity testing shall be those outlined for a 96-hour acute test in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, U.S. EPA-821-R-02-012" for *Pimephales promelas* (fathead minnow). Acute toxicity for *Oncorhynchus mykiss* (rainbow trout) may be used as a substitute for testing fathead minnows.

B.4.b. The methods for the chronic toxicity testing shall be those outlined for an 8-day chronic test in "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, U.S. EPA-821-R-02-013" for *Ceriodaphnia dubia* (Daphnia).

B.4.c. All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the U.S. EPA test method for Whole Effluent Toxicity (WET) testing[5] as well any toxicity provisions adopted by the State Water Board.

B.4.d. The toxicological information in the Passive Treatment Plan shall indicate the safety of the passive treatment product(s) based on expected release rates, toxicity reports, the anticipated concentration (calculated from product release rate) and intended use at the site.

C. PASSIVE TREATMENT APPLICATION REQUIREMENTS

C.1. The discharger shall ensure passive treatment product(s) are used as follows:

C.1.a. The distance or barrier between the treatment zone and the receiving water(s) shall comply with surface water buffer requirements, in Attachment D, Section II.G for traditional construction projects or Attachment E, Section II.G for linear underground and overhead projects, to prevent a discharge of treated effluent to the receiving water. Applying passive treatment products directly into a receiving water is prohibited.

C.1.b. Passive treatment application rates, dosing, and methods used in treatment zones shall be determined based on the manufacturer's guidance to provide adequate sediment control without having an excess amount in runoff.

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5 U.S. EPA. Whole Effluent Toxicity (WET). Web. <https://www.epa.gov/npdes/whole-effluent-toxicity-wet>. [as of May 20, 2021].

C.1.c. Passive treatment re-application rates, dosing, and methods used in treatment zones shall occur based on the manufacturer's recommended frequency and on-site conditions such as soil type, precipitation, and slope to avoid the discharge of excess product in runoff.

C.2. The Passive Treatment Chemicals Performance Testing,[6] Dosing, Mixing, and Settling for use in Sediment Control BMPs

C.2.a. The discharger shall ensure stormwater is treated and sediment from the site is tested by a person trained in the use of the passive treatment product prior to being applied at the site. The testing should demonstrate that the selected formulation is an effective product for removing suspended sediment.

C.2.b. The discharger shall employ a trained person to calculate the appropriate standard passive treatment product quantity per unit flow rate value using the following factors:

i. The specific chemical(s) or product(s) formulation being used;

ii. The amount of chemical/product applied;

iii. The flow rate of water through the system;

iv. The soil type and site topography; and

v. The physical structure of the system.

C.2.c. This calculated value shall be included in the Passive Treatment Plan and be recalculated and resubmitted via SMARTS as site conditions change.

C.2.d. The discharger shall employ a trained person to ensure that the mixing and reaction time recommended by the manufacturer is followed during passive treatment application.

C.2.e. The discharger shall ensure that the settling area for the passive treatment product-sediment laden stormwater is sized to hold the sediment and allows the reasonable cleanout frequency specified in the Passive Treatment Plan. A sedimentation basin BMP shall be implemented upon any evidence that previously settled sediment is being re-suspended.

D. PASSIVE TREATMENT MONITORING REQUIREMENTS

D.1. The discharger using passive treatment shall comply with the monitoring requirements of the General Permit's Order and all other applicable Attachments.

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6 Toronto and Region Conservation. Canada Anionic Polyacrylamide Application Guide for Urban Construction in Ontario. Web. June 2013. <https://sustainabletechnologies.ca/app/uploads/2013/02/Polymer-Guide-Final_NewFormat.pdf>. [as of May 20, 2021].

D.2. Passive Treatment Plan

A Qualified SWPPP Developer shall prepare the Passive Treatment Plan describing the appropriate application rates, dosing, mixing, settling, and filtration (if applicable). The Passive Treatment Plan shall include:[7]

a. A list of other erosion and sediment control BMPs implemented in the drainage area and treatment zones. Passive treatment shall not be used as a standalone BMP;

b. Manufacturer product details (e.g., function, physical form, product name, expiration date and any other identifiers), specifications, and current acute and chronic toxicological and ecological information;

c. The design details and drawings for maintenance and removal procedures for the products applied on-site;

d. Contact information (name, position, email, phone number) of the trained person who is implementing passive treatment for the discharger; Qualified SWPPP Practitioner; and other site personnel who are trained to assist the discharger with the passive treatment implementation;

e. Inspection and maintenance requirements for treatment zones;

f. Monitoring, sampling and reporting plan, including quality assurance/quality control (QA/QC);

g. Health and safety procedures;

h. Spill prevention and response procedures;

i. Calculated and re-calculated quantities of passive treatment products used (Section C.2 above);

j. Site-specific performance testing results and the associated dosage/application rate(s) (Section C.2 above);

k. Site map of:

   i. Site area location(s) where the product(s) is used (treatment zone);

   ii. Treatment zone effluent discharge location(s);

   iii. Site location(s) where product(s) will be stored;

   iv. Locations of product recovery BMP(s), including but not limited to, ponds, chemicals and/or product recovery BMPs etc.; and

7 Toronto and Region Conservation. Canada Anionic Polyacrylamide Application Guide for Urban Construction in Ontario. Web. June 2013. <https://sustainabletechnologies.ca/app/uploads/2013/02/Polymer-Guide-Final_NewFormat.pdf>. [as of May 20, 2021].

v. Surface water buffer between the passive treatment zone and receiving waters.

l. Treatment zone soil type(s);

m. Proposed application date(s) or schedule; and

n. Application method(s);

D.3. The discharger shall ensure a Qualified SWPPP Practitioner visually inspects the passive treatment zone surface condition within 72 hours before forecasted precipitation events and within 48 hours after qualifying precipitation events.

D.4. The discharger shall ensure that the trained person employed to implement the passive treatment completes a checklist with the following information during each passive treatment product application:

a. Application date(s);

b. Application method(s);

c. Weather condition(s) during application;

d. Estimated flow rate;

e. Estimated volume of water being treated;

f. Application rate(s), dosing, and mixing, consistent with the Passive Treatment Plan; and

g. Any other site-specific conditions or observations relevant to the functioning of the product.

D.5. The Regional Water Boards may use site-specific information to require additional sampling and monitoring[8] to confirm the toxicological requirements are being met and to ensure there are no adverse impacts to waters of the United States.

E. PASSIVE TREATMENT REPORTING REQUIREMENTS

E.1. The discharger using passive treatment shall comply with the reporting requirements of the General Permit's Order and all other applicable Attachments.

E.2. The Passive Treatment Plan shall be electronically certified and submitted through SMARTS 14 days prior to passive treatment use. A copy shall be available on-site during active construction. The Passive Treatment Plan shall be updated in accordance with the SWPPP update schedule specified in the Standard Provisions of this General Permit (Section VI).

8 Aquatic toxicity testing and applicable reporting, recordkeeping, and corrective action requirements; and/or residual chemical testing and applicable reporting, recordkeeping, and corrective action requirements.

E.3. The discharger shall ensure that all passive treatment application checklists are kept with the Passive Treatment Plan in accordance with Section VI.F in the Order.

ATTACHMENT H

TOTAL MAXIMUM DAILY LOAD IMPLEMENTATION REQUIREMENTS APPLICABLE TO CONSTRUCTION STORMWATER DISCHARGES

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

The following table contains a list of existing Total Maximum Daily Loads (TMDLs) that are identified as applicable to construction stormwater dischargers covered under this General Permit. The listed TMDLs were adopted by a Regional Water Quality Control Board or established by the U.S. EPA prior to the adoption date of this General Permit. The State Water Board may reopen this General Permit to update TMDL-specific requirements in this Attachment, or incorporate new applicable TMDLs adopted during the term of this General Permit.

Responsible Dischargers shall comply with the applicable TMDL-specific requirements by, and after, the Compliance Deadline date listed in Table H-2.

Table H-1: List of Applicable TMDLs
North Coast Regional Water Quality Control Board (Region 1)

TMDL	Pollutant
Albion River Sediment TMDL	Sediment
Big River Sediment TMDL	Sediment
Eel River – Lower Main Sediment TMDL	Sediment
Eel River – Lower Main Temperature TMDL	Temperature
Eel River – Middle Fork Sediment TMDL	Sediment
Eel River – Middle Main Sediment TMDL	Sediment
Eel River – Middle Main Temperature TMDL	Temperature
Eel River – North Fork Sediment TMDL	Sediment
Eel River – North Fork Temperature TMDL	Temperature
Eel River – South Fork Sediment TMDL	Sediment
Eel River – Upper Main Sediment TMDL	Sediment
Eel River – Upper Main Temperature TMDL	Temperature
Gualala River Sediment TMDL	Sediment
Mad River Sediment TMDL	Sediment
Mattole River Sediment TMDL	Sediment
Mattole River Temperature TMDL	Temperature
Navarro River Sediment TMDL	Sediment
Navarro River Temperature TMDL	Temperature
Noyo River Sediment TMDL	Sediment
Scott River Sediment TMDL	Sediment
Scott River Temperature TMDL	Temperature

TMDL	Pollutant
Ten Mile River Sediment TMDL	Sediment
Trinity River Sediment TMDL	Sediment
Van Duzen River Sediment TMDL	Sediment

San Francisco Bay Regional Water Quality Control Board (Region 2)

TMDL	Pollutant
Lagunitas Creek Sediment TMDL	Sediment
Napa River Sediment TMDL	Sediment
Pescadero and Butano Creek Sediment TMDL	Sediment
Sonoma Creek Sediment TMDL	Sediment

Central Coast Regional Water Quality Control Board (Region 3)

TMDL	Pollutant
Pajaro River Nutrients TMDL	Nitrogen Compounds and Orthophosphate
San Lorenzo River Siltation TMDL	Sediment

Los Angeles Regional Water Quality Control Board (Region 4)

TMDL	Pollutant
Ballona Creek, Ballona Estuary and Sepulveda Channel Bacteria TMDL	Bacteria
Ballona Creek Metals TMDL	Metals
Ballona Creek Estuary Toxics TMDL	Toxics
Calleguas Creek Watershed Salts TMDL	Salts (Boron, Chloride, Sulfate, TDS)
Calleguas Creek Watershed Metals and Selenium TMDL	Metals and Selenium
Calleguas Creek Watershed OC Pesticides and PCBs TMDL	Organochlorine Pesticides and PCBs
Colorado Lagoon Toxics TMDL	Metals, Organochlorine Pesticides, PAHs, PCBs, and Sediment Toxicity
Harbor Beaches of Ventura County Bacteria TMDL	Bacteria
Long Beach City Beaches and Los Angeles River Estuary Bacteria TMDL	Bacteria
Los Angeles Area Lakes TMDLs	Mercury, Nitrogen, Organochlorine Pesticides, PCBs, and Phosphorus
Los Angeles and Long Beach Harbor Waters TMDL	Metals and Toxics
Los Angeles Harbor Bacteria TMDL	Bacteria
Los Angeles River Bacteria TMDL	Bacteria
Los Angeles River Metals TMDL	Metals
Los Angeles River Nutrients TMDL	Nutrients
Los Cerritos Channel Metals TMDL	Metals

TMDL	Pollutant
Machado Lake Nutrients TMDL	Nutrients
Machado Lake Toxics TMDL	PCBs and Pesticides
Malibu Creek Bacteria TMDL	Bacteria
Marina del Rey Harbor Bacteria TMDL	Bacteria
Marina Del Rey Harbor Toxics TMDL	Toxics
Oxnard Drain No. 3 TMDL	PCBs, Pesticides, and Sediment Toxicity
San Gabriel River Metals and Selenium TMDL	Metals and Selenium
Santa Clara River Bacteria TMDL	Bacteria
Santa Clara River Nitrogen Compounds TMDL	Nutrients
Santa Clara River Reach 3 Chloride TMDL	Chloride
Santa Monica Bay Beaches Bacteria TMDL	Bacteria
Santa Monica Bay DDTs and PCBs TMDL	DDTs and PCBs
Upper Santa Clara River Chloride TMDL	Chloride
Ventura River Algae TMDL	Nutrients

Lahontan Regional Water Quality Control Board (Region 6)

TMDL	Pollutant
Squaw Creek Sediment TMDL	Sediment
Truckee River Sediment TMDL	Sediment

Santa Ana Regional Water Quality Control Board (Region 8)

TMDL	Pollutant
San Diego Creek and Newport Bay Nutrients TMDL	Nutrients
San Diego Creek and Newport Bay Organochlorine Compounds TMDL	Organochlorine Compounds
San Diego Creek and Newport Bay Sediment TMDL	Sediment
San Diego Creek and Newport Bay Toxics TMDL	Toxics

San Diego Regional Water Quality Control Board (Region 9)

TMDL	Pollutant
Chollas Creek Diazinon TMDL	Diazinon
Chollas Creek Metals TMDL	Metals
Los Peñasquitos Lagoon Sediment TMDL	Sediment

Table H-2: Compliance Table for TMDL Implementation Requirements
North Coast Regional Water Quality Control Board (Region 1) [1]

Responsible dischargers for the TMDLs listed in this table are not subject to additional TMDL-related numeric action levels or numeric effluent limitations.

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Albion River Sediment TMDL	Albion River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Big River Sediment TMDL	Big River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Eel River – Lower Main Sediment TMDL	Lower Eel River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*

1 Some TMDLs do not specifically state total concentrations for the constituents. Unless otherwise stated in Attachment H, Table H-2, the pollutant shall be reported in total concentrations.

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Eel River – Lower Main Temperature TMDL	Lower Eel River Watershed	Temperature	Comply with General Permit	September 1, 2023*
Eel River – Middle Fork Sediment TMDL	Middle Fork Eel River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Eel River – Middle Main Sediment TMDL	Middle Main Eel River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Eel River – Middle Main Temperature TMDL	Middle Main Eel River Watershed	Temperature	Comply with General Permit	September 1, 2023*
Eel River – North Fork Sediment TMDL	North Fork Eel River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Eel River – North Fork Temperature TMDL	North Fork Eel River Watershed	Temperature	Comply with General Permit	September 1, 2023*
Eel River – South Fork Sediment TMDL	South Fork Eel River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Eel River – Upper Main Sediment TMDL	Upper Eel River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Eel River – Upper Main Temperature TMDL	Upper Eel River Watershed	Temperature	Comply with General Permit	September 1, 2023*
Gualala River Sediment TMDL	Gualala River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Mad River Sediment TMDL	Mad River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Mattole River Sediment TMDL	Mattole River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Mattole River Temperature TMDL	Mattole River Watershed	Temperature	Comply with General Permit	September 1, 2023*
Navarro River Sediment TMDL	Navarra River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Navarro River Temperature TMDL	Navarro River Watershed	Temperature	Comply with General Permit	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Noyo River Sediment TMDL	Noyo River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Scott River Sediment TMDL	Scott River Watershed	Sediment	Comply with General Permit	September 1, 2023*
Scott River Temperature TMDL	Scott River Watershed	Temperature	Comply with General Permit	September 1, 2023*
Ten Mile River Sediment TMDL	Ten Mile River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*
Trinity River Sediment TMDL	Trinity River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Van Duzen River Sediment TMDL	Van Duzen River Watershed	Sediment	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.2 below.	September 1, 2023*

San Francisco Bay Regional Water Quality Control Board (Region 2) [2]

Responsible dischargers for the TMDLs listed in this table are not subject to additional TMDL-related numeric action levels or numeric effluent limitations.

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Lagunitas Creek Sediment TMDL	Lagunitas Creek Watershed	Sediment	Comply with General Permit	September 1, 2023*
Napa River Sediment TMDL	Napa River Watershed	Sediment	Comply with General Permit	September 1, 2023*
Pescadero and Butano Creek Sediment TMDL	Pescadero-Butano Watershed	Sediment	Comply with General Permit	September 1, 2023*
Sonoma Creek Sediment TMDL	Sonoma Creek Watershed	Sediment	Comply with General Permit	September 1, 2023*

2 Some of the TMDLs did not specifically state total concentrations for the constituents. Unless otherwise stated in Attachment H Table H-2, the pollutant should be reported in total concentrations.

Central Coast Regional Water Quality Control Board (Region 3) [3]

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Pajaro River Nutrients TMDL	Pajaro River Watershed	Un-ionized Ammonia	NAL of 0.025 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	July 12, 2041
Pajaro River Nutrients TMDL	Pajaro River Watershed Streams with MUN Beneficial Use	Nitrate-Nitrogen	NAL of 10.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	July 12, 2041

3 Some of the TMDLs did not specifically state total concentrations for the constituents. Unless otherwise stated in Attachment H Table H-2, the pollutant should be reported in total concentrations.

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
Pajaro River Nutrients TMDL	Pajaro River and Pajaro River Estuary Corralitos Creek and Salsipuedes Creek Beach Road Ditch and McGowan Ditch	Nitrate-Nitrogen	NAL of 8.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	July 12, 2041
Pajaro River Nutrients TMDL	Pajaro River and Pajaro River Estuary Corralitos Creek and Salsipuedes Creek Beach Road Ditch and McGowan Ditch	Orthophos-phate-Phosphorus	NAL of 0.3 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	July 12, 2041

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
Pajaro River Nutrients TMDL	Llagas Creek (Downstream of Cheseboro Reservoir), Carnadero Creek, Uvas Creek, and Furlong Creek San Juan Creek and West Branch of San Juan Creek Tequisquita Slough Watsonville Slough, Harkins Slough, Gallighan Slough, and Struve Slough Millers Canal	Nitrate-Nitrogen	NAL of 8.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	July 12, 2041

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
Pajaro River Nutrients TMDL	Llagas Creek (Downstream of Cheseboro Reservoir), Carnadero Creek, Uvas Creek, and Furlong Creek San Juan Creek and West Branch of San Juan Creek Tequisquita Slough Watsonville Slough, Harkins Slough, Gallighan Slough, and Struve Slough Millers Canal	Orthophos-phate-Phosphorus	NAL of 0.3 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	July 12, 2041
San Lorenzo River Siltation TMDL	San Lorenzo River Watershed	Sediment	None	Comply with General Permit	September 1, 2023*

Los Angeles Regional Water Quality Control Board (Region 4) [4]

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL	Ballona Creek	E. coli, Fecal Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL	Ballona Estuary	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL	Sepulveda Channel	E. coli	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*

4 Some of the TMDLs did not specifically state total concentrations for the constituents. Unless otherwise stated in Attachment H Table H-2, the pollutant should be reported in total concentrations.

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Ballona Creek Metals TMDL	Ballona Creek or Sepulveda Canyon Channel	Copper, Lead, and Zinc	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Ballona Creek Estuary Toxics TMDL	Ballona Creek or Ballona Creek Estuary	Cadmium, Chlordane, Copper, DDT, Lead, PCBs, Silver, and Zinc	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Calleguas Creek Watershed Salts TMDL	Calleguas Creek Watershed	Boron, Chloride, Sulfate, and Total Dissolved Solids (TDS)	None	Comply with General Permit	September 1, 2023*
Calleguas Creek Watershed Metals and Selenium TMDL	Calleguas Creek or Conejo Creek	Total Copper	Interim NAL of 0.204 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Calleguas Creek Watershed Metals and Selenium TMDL	Calleguas Creek or Conejo Creek	Copper, Nickel, and Selenium	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Calleguas Creek Watershed Metals and Selenium TMDL	Calleguas Creek or Conejo Creek	Mercury	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Calleguas Creek Watershed Metals and Selenium TMDL	Revolon Slough	Total Copper	Interim NAL of 0.204 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Calleguas Creek Watershed Metals and Selenium TMDL	Revolon Slough	Copper, Nickel, and Selenium	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Calleguas Creek Watershed Metals and Selenium TMDL	Revolon Slough	Mercury	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Calleguas Creek Watershed Organo-chlorine Pesticides and PCBs TMDL	Calleguas Creek Watershed	Chlordane, 4,4-DDD, 4,4-DDE, 4,4-DDT, Dieldrin, PCBs, and Toxaphene	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Colorado Lagoon Toxics TMDL	Colorado Lagoon Watershed	Chlordane, Dieldrin, DDT, Lead, PAHs, PCBs, and Zinc	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Harbor Beaches of Ventura County Bacteria TMDL	Kiddie and Hobie Beaches in the Channel Islands Harbor	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Long Beach City Beaches and Los Angeles River Estuary Bacteria TMDL	Long Beach City Beaches or Los Angeles River Estuary	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Echo Park Lake	Total Nitrogen	NAL of 1.33 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Echo Park Lake	Total Phosphorous	NEL of 0.16 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.4 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Echo Park Lake	Chlordane	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles Area Lakes TMDL	Echo Park Lake	Dieldrin	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Echo Park Lake	Total PCBs	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Legg Lakes	Total Nitrogen	NAL of 1.8 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Legg Lakes	Total Phosphorous	NEL of 0.64 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.4 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles Area Lakes TMDL	Peck Road Park Lake	Total Nitrogen	NAL of 3.61 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Peck Road Park Lake	Total Phosphorous	NEL of 0.37 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.4 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Peck Road Park Lake	Chlordane	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Peck Road Park Lake	Dieldrin	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles Area Lakes TMDL	Peck Road Park Lake	Total DDTs	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Peck Road Park Lake	Total PCBs	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Pudding-stone Reservoir	Total Nitrogen	NAL of 2.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Pudding-stone Reservoir	Total Phosphorous	NEL of 0.4 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.4 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles Area Lakes TMDL	Pudding-stone Reservoir	Chlordane	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Pudding-stone Reservoir	Dieldrin	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Pudding-stone Reservoir	Total DDTs	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*
Los Angeles Area Lakes TMDL	Pudding-stone Reservoir	Total PCBs	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.5 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel or Torrance Lateral	Total Copper	Interim NAL of 0.20751 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel or Torrance Lateral	Total Lead	Interim NAL of 0.12288 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel or Torrance Lateral	Total Zinc	Interim NAL of 0.89887 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel or Torrance Lateral	Total Copper	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.5 and I.G.6 below.	March 23, 2032

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel or Torrance Lateral	Total Lead	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.5 and I.G.6 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel or Torrance Lateral	Total Zinc	NEL of 100 mg/L TSS (if applicable per Section I.G.5 below)	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.5 and I.G.6 below.	March 23, 2032

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary and Greater Los Angeles/ Long Beach Harbor Waters including: Inner and Outer Harbor Main Channel Southwest Slip Cabrillo Marina Inner Cabrillo Beach Los Angeles River Estuary San Pedro Bay	Copper, DDT, Lead, PAHs, PCBs, and Zinc	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	4,4-DDT	Final NAL of $5.9 X10^{-7}$ mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	Chlordane	Final NAL of $5.9 X10^{-7}$ mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	Dieldrin	Final NAL of $1.4 X10^{-7}$ mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	Total Copper	Final NAL of 0.0058 mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	Total Lead	Final NAL of 0.221 mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	PAHs	Final NAL of $4.9 X10^{-5}$ mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	Total PCBs	Final NAL of $1.7 X10^{-7}$ mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	Total Zinc	Final NAL if 0.095 mg/L	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.3 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Dominguez Channel Estuary	Cadmium	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	March 23, 2032

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles and Long Beach Harbor Waters TMDL	Consoli-dated Slip	Cadmium, Chromium, and Mercury	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	March 23, 2032
Los Angeles and Long Beach Harbor Waters TMDL	Fish Harbor	Mercury	None	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.2 below.	March 23, 2032
Los Angeles Harbor Bacteria TMDL	Los Angeles Harbor (Inner Cabrillo Beach and Main Ship Channel)	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Los Angeles River Bacteria TMDL	Los Angeles River Watershed	E. coli	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles River Metals TMDL	Los Angeles River Watershed	Total Cadmium	NAL of 0.0031 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Los Angeles River Metals TMDL	Los Angeles River Watershed	Total Copper	NAL of 0.06749 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Los Angeles River Metals TMDL	Los Angeles River Watershed	Total Lead	NAL of 0.094 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Los Angeles River Metals TMDL	Los Angeles River Watershed	Total Zinc	NAL of 0.159 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles River Nutrients TMDL	Los Angeles River above the LA-Glendale WRP	Ammonia	NAL of 4.7 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles River Nutrients TMDL	Los Angeles River below the LA-Glendale WRP	Ammonia	NAL of 8.7 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles River Nutrients TMDL	Los Angeles River Watershed	Ammonia	NAL of 10.1 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles River Nutrients TMDL	Los Angeles River Watershed	Nitrate-Nitrogen	NAL of 8.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Angeles River Nutrients TMDL	Los Angeles River Watershed	Nitrite-Nitrogen	NAL of 1.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Angeles River Nutrients TMDL	Los Angeles River Watershed	Nitrate-Nitrogen + Nitrite-Nitrogen	NAL of 8.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Los Cerritos Channel Metals TMDL	Los Cerritos Channel	Total Copper	NAL of 0.0098 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Los Cerritos Channel Metals TMDL	Los Cerritos Channel	Total Lead	NAL of 0.0558 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Cerritos Channel Metals TMDL	Los Cerritos Channel	Total Zinc	NAL of 0.0956 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Machado Lake Nutrients TMDL	Machado Lake, Drain 553, Wilmington Drain, Project 77/510, and Walteria Lake	Total Nitrogen	NAL of 1.0 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Machado Lake Nutrients TMDL	Machado Lake, Drain 553, Wilmington Drain, Project 77/510, and Walteria Lake	Total Phosphorus	NAL of 0.1 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Machado Lake Toxics TMDL	Machado Lake, Drain 553, Wilmington Drain, Project 77/510, and Walteria Lake	Chlordane, DDD (all cogeners), DDE (all cogeners), DDT (all cogeners), Dieldrin, Total DDTs, and Total PCBs	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Malibu Creek Watershed Bacteria TMDL	Malibu Creek Watershed	E. coli	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Malibu Creek Watershed Bacteria TMDL	Malibu Lagoon and Adjacent Beach	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Marina del Rey Harbor Bacteria TMDL	Marina del Rey Harbor Mother's Beach and Back Basins D, E, and F	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Marina del Rey Harbor Toxics TMDL	Marina del Rey Harbor	Chlordane, Copper, Lead, p,p'-DDE, Total DDTs, Total PCBs, and Zinc	None	Comply with General Permit and the additional Metals and Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Oxnard Drain No. 3 TMDL	Oxnard Drain No. 3	4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Bifenthrin, Chlordane, Chlorpyrifos, Dieldrin, PCBs, Sediment Toxicity, and Toxaphene	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
San Gabriel River Metals and Selenium	San Gabriel River Reach 2 and Upper Reaches Watersheds	Total Lead	NAL 0.166 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Gabriel River Metals and Selenium	Coyote Creek Watershed	Total Copper	NAL 0.027 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Gabriel River Metals and Selenium	Coyote Creek Watershed	Total Lead	NAL 0.106 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Gabriel River Metals and Selenium	Coyote Creek Watershed	Total Zinc	NAL 0.158 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Santa Clara River Bacteria	Santa Clara River Estuary	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Santa Clara River Bacteria	Santa Clara River Reaches 3, 4, 5, 6, 7	E. coli	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Santa Clara River Nitrogen Com-pounds TMDL	Santa Clara River Reach 3	Ammonia	NAL of 4.2 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Santa Clara River Nitrogen Com-pounds TMDL	Santa Clara River Reach 7	Ammonia	NAL of 5.2 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Santa Clara River Reach 3 Chloride TMDL	Santa Clara River Reach 3	Chloride	None	Comply with General Permit	September 1, 2023*
Santa Monica Bay Beaches Bacteria TMDL	Santa Monica Bay Watershed Manage-ment Area	Enterococcus, Fecal Coliform, Total Coliform	None	Comply with General Permit and the additional Bacteria TMDL Requirements in Section I.A below.	September 1, 2023*
Santa Monica Bay DDTs and PCBs TMDL	Santa Monica Bay	DDT and PCBs	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*
Upper Santa Clara River Chloride TMDL	Santa Clara River Reach 5 and 6	Chloride	Chloride NAL of 100 mg/L	Comply with General Permit and the additional TMDL Requirements in Section I.B below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Ventura River Algae TMDL	Ventura River Estuary and Ventura River Reach 1	Total Nitrogen	NAL of 7.4 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Ventura River Algae TMDL	Ventura River Reach 2 and Cañada Larga	Nitrate-Nitrogen + Nitrite-Nitrogen	NAL of 10 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*
Ventura River Algae TMDL	Ventura River Reaches 3, 4, 5, and San Antonio Creek	Nitrate-Nitrogen + Nitrite-Nitrogen	NAL of 5 mg/L	Comply with General Permit and the additional Nutrients TMDL Requirements in Section I.D.3 below.	September 1, 2023*

Lahontan Regional Water Quality Control Board (Region 6) [5]

TMDL	Applicable Water Body/ Watershed	Pollutants	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Squaw Creek Sediment TMDL	Squaw Creek Watershed	Sediment	Comply with General Permit	September 1, 2023*
Truckee River Sediment TMDL	Middle Truckee River Watershed	Sediment	Comply with General Permit	September 1, 2023*

5 Some of the TMDLs did not specifically state total concentrations for the constituents. Unless otherwise stated in Attachment H Table H-2, the pollutant should be reported in total concentrations.

Santa Ana Regional Water Quality Control Board (Region 8) [6]

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
San Diego Creek and Newport Bay Nutrients TMDL	San Diego Creek, Newport Bay Watershed	Total Phosphorus	None	Comply with General Permit and the additional TMDL Requirements in Section I.D.2 below.	September 1, 2023*
San Diego Creek and Newport Bay Organo-chlorine Compounds TMDL	San Diego Creek Watershed	Total DDT and Toxaphene	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*
San Diego Creek and Newport Bay Organo-chlorine Compounds TMDL	Upper Newport Bay	Chlordane, Total DDT, and Total PCBs	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*

6 Some of the TMDLs did not specifically state total concentrations for the constituents. Unless otherwise stated in Attachment H Table H-2, the pollutant should be reported in total concentrations.

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
San Diego Creek and Newport Bay Organo-chlorine Compounds TMDL	Lower Newport Bay	Chlordane, Total DDT, and Total PCBs	None	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.2 below.	September 1, 2023*
San Diego Creek and Newport Bay Sediment TMDL	Newport Bay/San Diego Creek Watershed	Sediment	None	Comply with General Permit	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	San Diego Creek Watershed	Total Cadmium	NAL of 0.0097 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	San Diego Creek Watershed	Total Copper	NAL of 0.027 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
San Diego Creek and Newport Bay Toxics TMDL	San Diego Creek Watershed	Total Lead	NAL of 0.194 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	San Diego Creek Watershed	Total Zinc	NAL of 0.21 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	Upper Newport Bay	Total Cadmium	NAL of 0.042 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	Upper Newport Bay	Total Copper	NAL of 0.00578 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
San Diego Creek and Newport Bay Toxics TMDL	Upper Newport Bay	Total Lead	NAL of 0.221 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	Upper Newport Bay	Total Zinc	NAL of 0.095 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	Lower Newport Bay, Bay Segments (including Costa Mesa Channel and Santa Ana Delhi Channel), and Rhine Channel Area	Total Copper	NAL of 0.00578 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline ** Denotes Effective Date of this General Permit*
San Diego Creek and Newport Bay Toxics TMDL	Lower Newport Bay, Bay Segments (including Costa Mesa Channel and Santa Ana Delhi Channel), and Rhine Channel Area	Total Lead	NAL of 0.221 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*
San Diego Creek and Newport Bay Toxics TMDL	Lower Newport Bay, Bay Segments (including Costa Mesa Channel and Santa Ana Delhi Channel), and Rhine Channel Area	Total Zinc	NAL of 0.095 mg/L	Comply with General Permit and the additional Metals TMDL Requirements in Section I.G.3 below.	September 1, 2023*

San Diego Regional Water Quality Control Board (Region 9) [7]

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Chollas Creek Diazinon TMDL	Chollas Creek Watershed	Diazinon	None	Comply with General Permit and the use of Diazinon at the site is prohibited.	September 1, 2023*
Chollas Creek Metal TMDL	Chollas Creek	Dissolved Copper	Interim NAL of 0.083 mg/L	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Chollas Creek Metal TMDL	Chollas Creek	Dissolved Lead	Interim NAL of 0.068 mg/L	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.3 below.	September 1, 2023*

7 Some of the TMDLs did not specifically state total concentrations for the constituents. Unless otherwise stated in Attachment H Table H-2, the pollutant should be reported in total concentrations.

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline *Denotes Effective Date of this General Permit
Chollas Creek Metal TMDL	Chollas Creek	Dissolved Zinc	Interim NAL of 0.175 mg/L	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.3 below.	September 1, 2023*
Chollas Creek Metal TMDL	Chollas Creek	Dissolved Copper	Final NEL of 0.083 mg/L	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.4 below.	October 22, 2028
Chollas Creek Metal TMDL	Chollas Creek	Dissolved Lead	Final NEL of 0.068 mg/L	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.4 below.	October 22, 2028
Chollas Creek Metal TMDL	Chollas Creek	Dissolved Zinc	Final NEL of 0.175 mg/L	Comply with General Permit and the additional Toxics TMDL Requirements in Section I.G.4 below.	October 22, 2028

TMDL	Applicable Water Body/ Watershed	Pollutants	Additional TMDL-Related Numeric Action Level(s) or Numeric Effluent Limitation(s) (NAL/NEL)	Compliance Actions	Compliance Deadline * *Denotes Effective Date of this General Permit*
Los Peñasquitos Lagoon Sediment TMDL	Los Peñasquitos Lagoon Watershed	Sediment	None	Comply with General Permit and the additional Sediment TMDL Requirements in Section I.E.3 below.	July 14, 2034

I. TOTAL MAXIMUM DAILY LOAD (TMDL) IMPLEMENTATION REQUIREMENTS

This Section contains the TMDL-specific requirements that Responsible Dischargers shall implement to comply with applicable TMDLs by the TMDL Compliance Deadline provided in Table H-2. The requirements in this Section are listed in order of pollutant category, whereas Table H-2 is organized by Regional Water Board jurisdiction and watershed. The terms including, but not limited to, Responsible Discharger, numeric action levels and exceedances, and numeric effluent limitations and exceedances, are defined in Attachment B, Glossary, of this General Permit.

I.A. Bacteria TMDL Implementation Requirements

I.A.1. Compliance with General Permit

All Responsible Dischargers for the Bacteria TMDLs listed in Table H-2 shall comply with the requirements of this General Permit.

I.A.2. Bacteria TMDL BMPs

I.A.2.a. Minimum BMPs

I.A.2.a.i. The Responsible Discharger that identifies on-site sources of indicator bacteria in their pollutant source assessment shall implement BMPs specific to preventing or controlling stormwater exposure to indicator bacteria in addition to complying with this General Permit's requirements. The minimum bacteria source control BMPs include the following:

1. Qualified SWPPP Practitioner-conducted training for construction site staff; and
2. Routine housekeeping and sanitary waste management of identified sources of bacteria (e.g., portable toilets, dumpsters, etc.).

I.A.2.b. Structural BMPs

The Responsible Discharger shall evaluate and implement any necessary structural BMPs designed for retention, infiltration, or diversion of stormwater when the implemented minimum BMPs are inadequate to reduce bacteria loading to receiving waters.

I.A.2.c. The Responsible Discharger shall ensure all BMPs are implemented and address Bacteria TMDL requirements. The BMPs shall be visually inspected, maintained, repaired, and kept updated in the SWPPP in accordance with General Permit requirements specified in the Order and applicable requirements in Attachments D or Attachment E (per project Risk or Type.

I.B. Chloride and Salts TMDL Implementation Requirements

I.B.1. Compliance with this General Permit

All Responsible Dischargers for the Chloride and Salts TMDLs listed in Table H-2 shall comply with the requirements of this General Permit. Compliance with the requirements of this General Permit is consistent with the requirements and assumptions of the Chloride and Salts TMDL(s), unless specified below.

I.B.2. Numeric Action Level

I.B.2.a. The Responsible Discharger shall implement BMPs to address chloride and salts and prevent exceedances of the applicable numeric action levels to the extent possible. The BMPs shall be visually inspected, maintained, repaired, and updated in the SWPPP in accordance with this General Permit's requirements specified in the Order and applicable requirements in Attachments D or E for the site's Risk or Type.

I.B.2.b. The Responsible Discharger shall conduct non-visible pollutant monitoring, as required in Attachment D or E Section III.D.3, when the TMDL-specific pollutant may be discharged due to a failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

I.B.2.c. The Responsible Discharger shall compare the non-visible pollutant monitoring analytical results to the applicable numeric action level(s) in Table H-2.

I.B.2.d. The Responsible Discharger shall certify and submit all analytical results in SMARTS within 30 days of receiving the results, or within 10 days of receiving results above an applicable numeric action level.

I.B.2.e. A TMDL-related numeric action level exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in the applicable numeric action level. A numeric action level exceedance is not a violation of this General Permit; however, it is a violation when the discharger fails to report and respond to the numeric action level exceedance(s).

I.B.2.f. The Regional Water Boards may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information, including information about numeric action level exceedance(s).

I.C. Diazinon TMDL Implementation Requirements

I.C.1. Compliance with this General Permit

All Responsible Dischargers for the Diazinon TMDLs listed in Table H-2 shall comply with the requirements of this General Permit. Compliance with the requirements of this General Permit is consistent with the requirements and

assumptions of the TMDL. The use of diazinon has been banned for non-agricultural use by the California Department of Pesticide Regulation and the use is prohibited at construction sites.

I.D. Nutrient TMDL Implementation Requirements

I.D.1. Compliance with this General Permit

All Responsible Dischargers for the Nutrient TMDLs listed in Table H-2 shall comply with the requirements of this General Permit.

I.D.2. Erosion and Sediment Control and RUSLE2[8] Modeling

I.D.2.a A Responsible Discharger that identifies on-site sources of nutrients in their pollutant source assessment and that were assigned a mass-based waste load allocation in an applicable Nutrient TMDL(s),[9] shall address the TMDL through the following in addition to complying with this General Permit:

i. Comply with the site-specific erosion and sediment control, post-construction, and all other requirements in this General Permit;

ii. Install erosion and sediment controls that will result in predicted erosion rates that are equal to pre-construction conditions (e.g., undisturbed vegetation for the area) for each phase of the construction project; and

iii. Use RUSLE2 modeling to calculate the predicted soil losses and sediment delivery rates when selecting temporary BMPs and controls to be applied during each phase of the project. The RUSLE2 modeling included in the SWPPP shall include:

1. Appropriate climatic variables, soil types, and slope topography for the area disturbed; and

2. Calculated soil loss and sediment delivery rates for the selected BMPs and controls equal to, or less than, the soil loss and sediment delivery rates for pre-construction conditions during each phase of the construction project.

I.D.3. Numeric Action Level

I.D.3.a. The Responsible Discharger shall implement BMPs to address nutrients listed in the TMDL and prevent exceedances of the applicable numeric action levels to the extent possible. The BMPs shall be visually inspected, maintained, repaired, and updated in the SWPPP in accordance with this General Permit's

8 Revised Universal Soil Loss Equation, Version 2

9 Table H-2 specifies this section in the Compliance Action column for these TMDLs.

requirements specified in the Order and applicable requirements in Attachments D or E for the site's Risk or Type.

I.D.3.b. The Responsible Discharger shall conduct non-visible pollutant monitoring, as required in Attachment D or E Section III.D.3, when the TMDL-specific pollutant may be discharged due to a failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

I.D.3.c. The Responsible Discharger shall compare the non-visible pollutant monitoring analytical results to the applicable numeric action level(s) in Table H-2.

I.D.3.d. The Responsible Discharger shall certify and submit all analytical results in SMARTS within 30 days of receiving the results, or within 10 days of receiving results above an applicable numeric action level.

I.D.3.e. A TMDL-related numeric action level exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in the applicable numeric action level. A numeric action level exceedance is not a violation of this General Permit; however, it is a violation when the discharger fails to report and respond to the numeric action level exceedance(s).

I.D.3.f. The Regional Water Boards may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information, including information about the numeric action level exceedance(s).

I.D.4. Numeric Effluent Limitation

I.D.4.a. The Responsible Discharger shall implement BMPs to address nutrients and prevent exceedances of the applicable numeric effluent limitations. The BMPs shall be visually inspected, maintained, repaired, and updated in the SWPPP in accordance with this General Permit's requirements specified in the Order and applicable requirements in Attachments D or E for the site's Risk or Type.

I.D.4.b. The Responsible Discharger shall conduct non-visible pollutant monitoring, as required in Attachment D or E Section III.D.3, when the TMDL-specific pollutant may be discharged due to a failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

I.D.4.c. The Responsible Discharger shall compare the non-visible pollutant monitoring analytical results to the applicable numeric effluent limitation(s) in Table H-2.

I.D.4.d. The Responsible Discharger shall certify and submit the analytical results in SMARTS within 30 days of receiving the results, or within 10 days of receiving results above an applicable numeric effluent limitation.

I.D.4.e. A TMDL-related numeric effluent limitation exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in the applicable numeric effluent limitation. Upon exceedance of the applicable numeric effluent limitation, the Responsible Discharger shall comply with the Water Quality Based Corrective Actions in Section VI.Q of this General Permit's Order. A numeric effluent limitation exceedance is a violation of this General Permit and is subject to mandatory minimum penalties.

I.D.4.f. The Regional Water Boards may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information, including information about exceedances of the numeric effluent limitation(s).

I.E. Sediment TMDL Implementation Requirements

I.E.1. Compliance with this General Permit

All Responsible Dischargers for the Sediment TMDLs listed in Table H-2 are to comply with the requirements of this General Permit. Compliance with the requirements of this General Permit is consistent with the requirements and assumptions of the Sediment TMDLs, unless specified below.

I.E.2. Erosion and Sediment Control BMPs and RUSLE2 Modeling

I.E.2.a. A Responsible Discharger assigned a mass-based sediment waste load allocation for sediment shall address the TMDL through the following in addition to complying with this General Permit:

I.E.2.a.i. Comply with the site-specific erosion and sediment control, post-construction, and all other requirements in this General Permit; and

I.E.2.a.ii. Use RUSLE2 modeling to calculate the predicted soil losses and sediment delivery rates when selecting temporary BMPs and controls to be applied during each phase of the project. The RUSLE2 modeling included in the SWPPP shall include:

1. Appropriate climatic variables, soil types, and slope topography for the area disturbed; and
2. Calculated soil loss and sediment delivery rates for the selected BMPs and controls equal to, or less than, the soil loss and sediment delivery rates for pre-construction conditions during each phase of the construction project.

I.E.2.a.iii. A Responsible Discharger that is assigned a mass-based sediment waste load allocation of zero (0),[10] shall install erosion and sediment controls that will result in predicted erosion rates that are as protective as pre-construction conditions (e.g., undisturbed vegetation for the area). The calculated RUSLE2 soil loss and sediment delivery rates for the selected BMPs and controls shall be equal to, or less than, the soil loss and sediment delivery rates for pre-construction conditions during each phase of the construction project.

I.E.2.a.iv. A Responsible Discharger that is assigned a site-specific mass-based sediment waste load allocation,[11] shall install erosion and sediment controls that will result in predicted erosion rates that are equal to or less than the site-specific allocation for sediment loading. The calculated RUSLE2 soil loss and sediment delivery rates for the selected BMPs and controls shall be equal to, or less than, the site-specific mass-based sediment waste load allocation. The Responsible Discharger is required to calculate their site-specific mass-based sediment waste load allocation by multiplying the construction site's area by the water body's applicable load allocation, provided in Table H-3.

Table H-3: TMDL Watersheds with Site-Specific Mass-Based Sediment Waste Load Allocations[12]

TMDL Watershed	Waste Load Allocation (tons/mi^2/yr)
Lower Eel River Watershed (Road, Episodic)[13]	9
Lower Eel River Watershed (Road, Chronic)	17
Lower Eel River Watershed (Bank Erosion)	6
Middle Fork Eel River – Black Butte Subwatershed	7
Middle Fork Eel River – Elk Creek Subwatershed	41
Middle Fork Eel River – Round Valley Subwatershed	9
Middle Fork Eel River – Upper Middle Fork Subwatershed	9
Middle Fork Eel River – Williams/Thatcher Subwatershed	19
Middle Fork Eel River Watershed	23
Upper Main Eel River Watershed (Large Features >3,000 yds^3)	36
Upper Main Eel River Watershed (Road Related – Small Features)	14
Mad River Watershed (Roads)	174

10 Table H-2 specifies this section in the Compliance Action column for these TMDLs.

11 Table H-2 specifies this section in the Compliance Action column for these TMDLs.

12 More information for specific TMDL watersheds and site-specific mass-based sediment TMDLs can be found in Section W.6.e of this General Permit's Fact Sheet.

13 Some waste load allocations may only apply to certain projects (e.g., roads, along banks, small or large features). Waste load allocations that only apply to certain projects are noted in parentheticals.

TMDL Watershed	Waste Load Allocation (tons/mi^2/yr)
Scott River Watershed (Roads and Small Streamside Features)	69
Trinity River – Upper Area Reference Subwatersheds[14]	281
Trinity River – Westside Tributaries Subwatershed	105
Trinity River – Upper Trinity Subwatershed	690
Trinity River – East Fork Tributaries Subwatershed	65
Trinity River – Eastside Tributaries Subwatershed	60
Trinity River – Weaver and Rush Creeks Subwatershed	169
Trinity River – Deadwood Creek, Hoadley Gulch, and Poker Bar Area Subwatershed	68
Trinity River – Lewiston Lake Area Subwatershed	49
Trinity River – Grass Valley Creek Subwatershed	44
Trinity River – Indian Creek Subwatershed	81
Trinity River – Reading and Browns Creek Subwatershed	66
Trinity River – Lower Middle Area Reference Subwatersheds[15]	24
Trinity River – Canyon Creek Subwatershed	326
Trinity River – Upper Tributaries Subwatershed	67
Trinity River – Middle Tributaries Subwatershed	53
Trinity River – Lower Tributaries Subwatershed	55
Trinity River – Lower Area Reference Subwatersheds[16]	528
Trinity River – Mill Creek and Tish Tang Subwatershed	210
Trinity River – Willow Creek Subwatershed	94
Trinity River – Campbell Creek and Supply Creek Subwatershed	1961
Trinity River – Lower Mainstem Area and Coon Creek Subwatershed	63

I.E.3. Los Peñasquitos Lagoon Sediment TMDL

I.E.3.a. All Responsible Dischargers for the Los Peñasquitos Lagoon Sediment TMDL shall provide an estimate of the representative flow rate of discharge from the construction project for at least one precipitation event each reporting year, in addition to complying with this General Permit.

I.E.3.b. The Responsible Discharger shall submit the representative flow estimate as a PDF attachment to the Annual Report (due in SMARTS no later than September 1 of each year).

14 Stuarts Fork, Swift Creek, and Coffee Creek

15 New River, Big French, Manzanita, North Fork, East Fork, North Fork

16 Horse Linto Creek

I.F. Temperature TMDL Implementation Requirements

I.F.1. Compliance with this General Permit

All Responsible Dischargers for the Temperature TMDLs listed in Table H-2 shall comply with the requirements of this General Permit. Compliance with this General Permit is consistent with the requirements and assumptions of the North Coast Temperature TMDL Implementation Policy and no additional requirements are incorporated into this General Permit to implement Temperature TMDLs listed in Table H-2.

I.G. Metals and Toxics TMDL Implementation Requirements

I.G.1. Compliance with this General Permit

All Responsible Dischargers for the Metals or Toxics TMDLs listed in Table H-2 shall comply with the requirements of this General Permit. Compliance with the requirements of this General Permit is consistent with the requirements and assumptions of the Metals or Toxics TMDLs, unless specified below.

I.G.2. Erosion and Sediment Control BMPs and RUSLE2 Modeling

I.G.2.a. A Responsible Discharger that identifies on-site sources of metals or toxics in their pollutant source assessment and are assigned a mass-based waste load allocation, shall address the TMDL through the following in addition to complying with this General Permit:

i. Comply with the site-specific erosion and sediment control, post-construction, and all other requirements in this General Permit;

ii. Install erosion and sediment controls that will result in predicted erosion rates that are as protective as pre-construction conditions (e.g., undisturbed vegetation for the area) for each phase of the construction project; and

iii. Use RUSLE2 modeling to calculate the predicted soil losses and sediment delivery rates when selecting temporary BMPs and controls to be applied during each phase of the project. The RUSLE2 modeling included in the SWPPP shall include:

1. Appropriate climatic variables, soil types, and slope topography for the area disturbed; and

2. Calculated soil loss and sediment delivery rates for the selected BMPs and controls equal to, or less than, the soil loss and sediment delivery rates for pre-construction conditions during each phase of the construction project.

I.G.3. Numeric Action Level

I.G.3.a. The Responsible Discharger shall implement BMPs to address the metals or toxics listed in the TMDL and prevent exceedances of the applicable numeric

action levels to the extent possible. The BMPs shall be visually inspected, maintained, repaired, and updated in the SWPPP in accordance with this General Permit's requirements specified in the Order and applicable requirements in Attachments D or E for the site's Risk or Type.

I.G.3.b. The Responsible Discharger shall conduct non-visible pollutant monitoring, as required in Attachment D or E Section III.D.3, when the TMDL-specific pollutant may be discharged due to a failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

I.G.3.c. The Responsible Discharger shall compare the non-visible pollutant monitoring analytical results to the applicable numeric action level(s) in Table H-2. The Responsible Discharger may provide the Water Boards adequate information demonstrating that it is infeasible to analyze the samples for compliance with a numeric action level using an ELAP-accredited laboratory for methods compliant with 40 Code of Federal Regulations Part 136. The Water Boards will specify the appropriate monitoring methods to determine compliance if it is demonstrated that it is infeasible to analyze samples for compliance with a numeric effluent limitation.

I.G.3.d. The Responsible Discharger shall certify and submit all analytical results in SMARTS within 30 days of receiving the results, or within 10 days of receiving results above an applicable numeric action level.

I.G.3.e. A TMDL-related numeric action level exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in the applicable numeric action level. A numeric action level exceedance is not a violation of this General Permit; however, it is a violation when the discharger fails to report and respond to the numeric action level exceedance(s).

I.G.3.f. The Regional Water Boards may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information, including information about the numeric action level exceedance(s).

I.G.4. Numeric Effluent Limitation

I.G.4.a. The Responsible Discharger shall implement BMPs to address the metals or toxics listed in the TMDL and prevent exceedances of the applicable numeric effluent limitations. The BMPs shall be visually inspected, maintained, repaired, and updated in the SWPPP in accordance with this General Permit's requirements specified in the Order and applicable requirements in Attachments D or E for the site's Risk Level or Type.

I.G.4.b. The Responsible Discharger shall conduct non-visible pollutant monitoring, as required in Attachment D or E Section III.D.3, when the TMDL specific pollutant

may be discharged due to a failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

I.G.4.c. The Responsible Discharger shall compare the non-visible pollutant monitoring analytical results to the applicable numeric effluent limitation(s) in Table H-2. The Responsible Discharger may provide the Water Boards information demonstrating that it is infeasible to analyze the samples for compliance with a numeric effluent limitation using an ELAP-accredited laboratory for methods compliant with 40 Code of Federal Regulations Part 136. The Water Boards will specify the appropriate monitoring methods to determine compliance if it is demonstrated that it is infeasible to analyze samples for compliance with a numeric effluent limitation. See the TMDL-related soil screening investigation and associated total suspended solids (TSS) numeric effluent limitations for the Los Angeles Area Lakes TMDL and the Los Angeles and Long Beach Harbor Waters TMDL in Section I.G.5 below, if applicable.

I.G.4.d. The Responsible Discharger shall certify and submit the analytical results in SMARTS within 30 days of receiving the results, or within 10 days of receiving results above an applicable numeric effluent limitation.

I.G.4.e. A TMDL-related numeric effluent limitation exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in the applicable numeric effluent limitation. Upon exceedance of the applicable numeric effluent limitation, the Responsible Discharger shall comply with the Water Quality Based Corrective Actions in Section VI.Q of this General Permit's Order. A numeric effluent limitation exceedance is a violation of this General Permit and is subject to mandatory minimum penalties.

I.G.4.f. The Regional Water Boards may assign additional monitoring, reporting, and BMP requirements upon obtaining site-specific information, including information about exceedances of the numeric effluent limitation(s).

I.G.5. TMDL-related Soil Screening Investigation and Associated TSS Numeric Effluent Limitations

I.G.5.a. To comply with the Los Angeles Area Lakes TMDL for chlordane, DDT, dieldrin, and PCBs and, beginning March 23, 2032, the Los Angeles and Long Beach Harbor Waters TMDL for copper, lead, and zinc, dischargers that discharge to: 1) Peck Road Park Lake, Echo Park Lake, or Puddingstone Reservoir; or 2) Dominguez Channel or Torrance Lateral Channel shall use the following soil screening investigation as part of their pollutant source assessment and comply with the numeric effluent limitation for TSS, if applicable. As set forth in Order, Section VI.O.4, this General Permit may be reopened prior to March 23, 2032,

to revise the requirements implementing the Los Angeles and Long Beach Harbor Waters TMDL for copper, lead, and zinc. As set forth in Order, Section VI.O.5, this General Permit may be reopened to revise the requirements implementing the Los Angeles Lakes TMDL for chlordane, DDT, dieldrin, and PCBs at a publicly noticed Board meeting.

I.G.5.a.i. The discharger shall conduct a soil screening investigation as part of the pollutant source assessment, prior to initiation of land disturbance activities at the site, to determine whether subsequent numeric effluent limitation sampling is required. The soil screening investigation shall be conducted by, or under the direction of, a California Professional Engineer (PE), California Professional Geologist (PG), or Qualified SWPPP Developer (QSD).

I.G.5.a.ii. Soil Sampling Locations[17]

I.G.5.a.ii.1. The discharger shall determine sampling plots by graphically applying a sampling grid with perpendicular line intersections to a map or other representation of the entire parcel or construction site. Each plot or block of the grid overlay must be sized in accordance with the scale specifications in Table H-4 below.

Table H-4: Soil Sampling Plot Specifications

Total Parcel or Site Area	>1 to 5 acres	>5 to 20 acres	>20 acres
Sampling Grid Scale	One-quarter acre	One-half acre	One acre

I.G.5.a.ii.2. The discharger shall collect at least one soil sample from a randomly selected location within each sampling plot. To ensure randomness, each plot shall be further divided into nine equal subsections, each assigned a unique number from one to nine. The discharger shall use a random number generator to select which subsection will be sampled; the soil sample location may be anywhere within the selected subsection.

I.G.5.a.iii. Soil Sample Collection

I.G.5.a.iii.1. The discharger may utilize hand sampling methods or devices such as mechanical or hydraulic earth drills to collect soil samples. Hand methods may be economically preferable as the required soil sample depths are less than two feet.

I.G.5.a.iii.2. The discharger shall obtain a three-point composite sample of in-situ soil, consisting of roughly equal volumes from 6 inches, 12 inches, and 18 inches

17 The sampling protocol was modified from United States Environmental Protection Agency "Superfund Soil Screening Guidance" and United States Department of Agriculture and Natural Resource Conservation Service "Sampling Soils for Nutrient Management".

below surface at each soil sample location. The listed depths are the 'start depths' or 'top depths' for each composite portion. Soil samples shall be obtained from below the grass or forb root zone if present. The total quantity of each soil sample shall be approximately 20 cubic inches of volume, or one pound (0.5 kilograms) by weight.

I.G.5.a.iii.3. The discharger shall immediately seal brass or acrylic sampling tubes sealed with Teflon™ squares and plastic caps. Otherwise, soil samples shall be placed in 500 milliliter glass jars with tightly sealable caps.

I.G.5.a.iii.4. The discharger shall label each soil sample with a unique identifier, the address or location of the site, the name of the person that collected the sample, and the collection date.

I.G.5.a.iii.5. The Responsible Discharger shall maintain soil samples at a temperature of 4°Celsius until delivered to an ELAP-accredited analytical laboratory under chain-of-custody for analysis.

I.G.5.a.iv. Soil Sample Analysis

I.G.5.a.iv.1. For total copper, total lead, and total zinc, the discharger shall use EPA method 6010D, 6020B, or a comparable method validated for the analysis of metals in soil samples. For chlordane, DDT, and dieldrin, the discharger shall use EPA method 8081B or a comparable method validated for the analysis of chlordane, DDT, and dieldrin in soil samples. For PCBs, the discharger shall use EPA method 8082A or a comparable method validated for the analysis of PCBs in soil samples.

I.G.5.a.iv.2. The laboratory report must include the reporting limit for each analyte.

I.G.5.a.v. Soil Sample Reporting

The discharger shall submit soil sample analytical results via SMARTS prior to initiation of land disturbance activities.

I.G.5.a.vi. TSS Numeric Effluent Limitation

I.G.5.a.vi.1. If all soil sample analysis results for each applicable TMDL analyte are below their respective analytical reporting limits, the discharger is not considered a Responsible Discharger and does not have to sample for the TMDL-specific pollutant(s) under the non-visible pollutant monitoring requirements in Attachments D or E Section III.D.3, of this General Permit.

I.G.5.a.vi.2. If one or more of the specified TMDL analytes are measured above the respective analytical reporting limits, the discharger is considered a Responsible Discharger and shall:

a. Implement sediment control BMPs that are effective at removing the applicable TMDL-specific pollutant, such as, but not limited to, media filter socks or fiber rolls, advanced silt fencing, and sedimentation

basins. The BMPs shall be visually inspected, maintained, repaired, and updated in the SWPPP in accordance with this General Permit's requirements specified in the Order and applicable requirements in Attachments D or E for the site's Risk Level or Type.

b. Comply with a TSS numeric effluent limitation of 100 mg/L, as follows:

i. Collect samples for TSS following the same procedure as non-visible pollutant monitoring, as required in Attachment D or E Section III.D.3, when the TMDL-specific pollutants may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

ii. Analyze the collected samples using the current version of Standard Method 2540 D.

iii. Compare the analytical results to a numeric effluent limitation of 100 mg/L of TSS[18], as the applicable limitation for each of the applicable TMDL-specific pollutants identified in the soil screening investigation process described above.

iv. Certify and submit the analytical results in SMARTS within 30 days of receiving the results or within 10 days of receiving results above the numeric effluent limitation for TSS.

I.G.5.a.vi.3. A TMDL-related numeric effluent limitation exceedance occurs on the second, and each subsequent, analytical result for samples taken from any and all discharge location(s) within the same drainage area, during the same reporting year and taken in accordance with Attachment D or E Section III.D.3, that is above the concentration set forth in the numeric effluent limitation. For the second and each subsequent analytical result that is above the TSS numeric effluent limitation, the exceedance shall apply to every TMDL-specific pollutant identified in the soil screening investigation process, regardless of any results from the informational monitoring described in I.G.6 below. Upon exceedance of the numeric effluent limitation, the Responsible Discharger shall comply with the Water Quality Based Corrective Actions in Section VI.Q of this General Permit's Order. A

[18] Nasrabadi T, Ruegner H, Schwientek M, Bennett J, Fazel Valipour S, Grathwohl P (2018) "Bulk metal concentrations versus total suspended solids in rivers: Time-invariant & catchment-specific relationships."

Washington Department of Ecology (2004) "A Total Maximum Daily Load Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River."

Angela Gorgoglione, Fabián A. Bombardelli, Bruno J. L. Pitton, Lorence R. Oki, Darren L. Haver and Thomas M. Young (2018), "Role of Sediments in Insecticide Runoff from Urban Surfaces: Analysis and Modeling."

numeric effluent limitation exceedance is a violation of this General Permit and is subject to mandatory minimum penalties.

I.G.5.a.vi.4. The Regional Water Boards may require additional monitoring, reporting, and BMP requirements upon obtaining site-specific information, including information about exceedances of the numeric effluent limitation.

I.G.6. Water Quality Sampling for Los Angeles and Long Beach Harbor Waters Metals TMDL starting March 23, 2032

This General Permit implements TSS numeric effluent limitations as a surrogate for limiting discharges of sediment-bound total copper, total lead, and total zinc. Starting March 23, 2032, to correlate and quantify actual discharges of copper, lead, and zinc concentrations in construction stormwater discharges with measured discharge concentrations of TSS, the Responsible Dischargers for the Los Angeles and Long Beach Harbor Waters Metals TMDL, as determined by Section I.G.5 above, shall:

a. Collect effluent water quality samples following the same procedure as non-visible pollutant monitoring, as required in Attachment D or E Section III.D.3, when the pollutants may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

b. Analyze the collected samples for total copper, total lead, and total zinc, using an ELAP-accredited laboratory for methods compliant with 40 Code of Federal Regulations Part 136.

c. Certify and submit the analytical results in SMARTS within 30 days of receiving the results.

d. The analytical results are informational only and will not be used to assess compliance with any limitation in this General Permit.

ATTACHMENT I

REQUIREMENTS FOR DISCHARGERS GRANTED A REGULATORY EXCEPTION FOR DISCHARGES TO AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

A. AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE

A.1. Areas of Special Biological Significance (ASBS) are defined in the Water Quality Control Plan for Ocean Waters of California (California Ocean Plan) as “those areas designated by the State Water Resources Control Board (State Water Board) as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable.”

A.2. The California Ocean Plan prohibits the discharge of waste to an ASBS.

A.3. The California Ocean Plan authorizes the State Water Board to grant an exception to California Ocean Plan provisions where the Board determines that the exception will not compromise protection of ocean waters for beneficial uses and the public interest will be served.

A.4. On March 20, 2012, the State Water Board adopted Resolution 2012-0012 (amended by Resolution 2012-0031) which contained a general exception to the California Ocean Plan for discharges of stormwater and non-point sources (ASBS Exception). This resolution also contains the Special Protections that are to be implemented for discharges directly to an ASBS. Resolution 2012-0012 (as amended by Resolution 2012-0031) is hereby incorporated by reference and construction stormwater dischargers discharging directly to an ASBS must comply with its requirements.

A.5. This General Permit requires dischargers who have been granted a California Ocean Plan exception for discharges to an ASBS to comply with the requirements contained in the Special Protections. These requirements are contained below.

B. ASBS NON-STORMWATER DISCHARGES

B.1. The term “ASBS Non-Stormwater Discharges” means any waste discharges from a municipal separate storm sewer system (MS4) or other NPDES permitted storm drain system to an ASBS that are not comprised entirely of stormwater.

B.2. Only the following ASBS Non-Stormwater Discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability, or occur naturally:

a. Discharges associated with emergency firefighting operations.

b. Foundation and footing drains.

c. Water from crawl space or basement pumps.

d. Hillside dewatering.

e. Naturally occurring groundwater seepage via a storm drain.

f. Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

B.3. Authorized ASBS Non-Stormwater Discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the California Ocean Plan nor alter natural ocean water quality in an ASBS.

B.4. In the San Clemente Island ASBS, discharges incidental to military training and research, development, test, and evaluation operations are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed in the two military closure areas in the vicinity of Wilson Cove and Castle Rock. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

B.5. In the San Nicolas Island and Begg Rock ASBS, discharges incidental to military research, development, testing, and evaluation of, and training with, guided missile and other weapons systems, fleet training exercises, small-scale amphibious warfare training, and special warfare training are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

C. ASBS COMPLIANCE PLAN

C.1. State Water Board Resolution 2012-0012 grants an exception to the California Ocean Plan's prohibition on discharges to an ASBS (ASBS Exception) to applicants who were identified as dischargers of construction stormwater to an ASBS (ASBS dischargers). Each ASBS discharger shall specifically address the prohibition of ASBS Non-Stormwater Discharges and the requirement to maintain natural water quality for construction stormwater discharges to an ASBS in an ASBS Compliance Plan to be included in the ASBS discharger's Stormwater Pollution Prevention Plan (SWPPP). The ASBS Compliance Plan is subject to approval by the Executive Director of the State Water Board. The ASBS Compliance Plan shall include:

a. A map of surface drainage of stormwater runoff, showing areas of sheet runoff and priority discharges, and a description of any structural Best Management Practices (BMPs) already employed and/or BMPs to be employed in the future. Priority discharges are those that pose the greatest water quality threat, and which are identified as requiring installation of structural BMPs. The map shall also show the stormwater conveyances in relation to other features such as service areas, sewage conveyances and treatment facilities, landslides, areas prone to erosion, and waste and hazardous material storage areas, if applicable. The SWPPP shall also include a procedure for updating the map and plan when changes are made to the stormwater conveyance facilities.

b. A description of the measures by which all unauthorized ASBS Non-Stormwater Discharges (e.g., dry weather flows) has been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.

c. A description of how pollutant reductions in stormwater runoff, that are necessary to comply with these special conditions, will be achieved through BMPs. Structural BMPs need not be installed if the discharger can document to the satisfaction of the Executive Director that such installation would pose a threat to health or safety. BMPs to control stormwater runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:

   i. Instantaneous Maximum Water Quality Objectives in Table 1 (provided at the end of this Attachment); or

   ii. A 90 percent reduction in pollutant loading during storm events, for the applicant's total discharges.

d. A description of how the ASBS discharger will address erosion and the prevention of anthropogenic sedimentation in the ASBS. The natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation.

e. A description of the non-structural BMPs currently employed and planned in the future (including those for construction activities), and an implementation schedule. The ASBS Compliance Plan shall also describe the structural BMPs, including any low impact development measures, currently employed and planned for higher threat discharges and include an implementation schedule. To control stormwater runoff discharges (at the end-of-pipe) during a design storm, ASBS dischargers must first consider using low impact development practices to infiltrate, use, or evapotranspiration stormwater runoff on-site. The BMPs and implementation schedule shall be designed to ensure that natural water quality conditions in the receiving water are achieved and maintained by either reducing flows from impervious surfaces or reducing pollutant loading, or some combination thereof.

D. REPORTING

If the results of the receiving water monitoring described in Section E below (Sampling and Analysis Requirements) indicate that the stormwater runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the ASBS discharger shall submit a report to the State Water Board within 30 days of receiving the results.

D.1. The report shall identify the constituents in stormwater runoff that alter natural ocean water quality and the sources of these constituents.

D.2. The report shall describe BMPs that are currently being implemented, BMPs that are identified in the SWPPP for future implementation, and any additional BMPs

that may be added to the SWPPP to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the BMPs.

D.3. The ASBS discharger shall revise its ASBS Compliance Plan to incorporate any new or modified BMPs that have been or will be implemented, the implementation schedule, and any additional monitoring required within 30 days of the approval of the report by the Executive Director.

D.4. The discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural ocean water quality conditions due to the same constituent when the ASBS discharger is in compliance with the procedures described above and is implementing the revised SWPPP.

D.5. Compliance with this Section does not excuse violations of any term, prohibition, or special condition contained in the Special Protections of the ASBS Exception.

E. SAMPLING AND ANALYSIS REQUIREMENTS

E.1. Monitoring is mandatory for all ASBS dischargers to assure compliance with the California Ocean Plan. Monitoring requirements include both: (1) Core Discharge Monitoring and (2) Ocean Receiving Water Monitoring (see sections below). The State Water Board and Regional Water Quality Control Boards (Regional Water Boards) must approve sampling site locations and any adjustments to the monitoring programs. All ocean receiving water and reference area monitoring must be comparable with the Water Boards' Surface Water Ambient Monitoring Program (SWAMP).

E.2. Sample locations and sampling periods must be determined considering safety issues. Sampling may be postponed upon notifying the State Water Board Executive Director or the appropriate Regional Water Board Executive Officer that hazardous conditions prevail.

E.3. All constituents must be analyzed using the lowest minimum detection limits comparable to the California Ocean Plan water quality objectives and in compliance with U.S. EPA sufficiently sensitive method requirements in 40 Code of Federal Regulations Part 136. All samples being analyzed for metals (including stormwater effluent, reference samples, and ocean receiving water samples) must use an approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the California Ocean Plan.

F. CORE DISCHARGE MONITORING PROGRAM

F.1. General Sampling Requirements for Timing and Storm Size

Runoff must be collected during a storm event that is greater than 0.1 inch and generates runoff, and at least 72 hours from the previously measurable storm event. Runoff samples shall be collected during the same storm and approximately at the same time as the post-storm receiving water and reference site samples being analyzed for the same constituents as described in Section G below.

F.2. Runoff Samples – Storm Events

F.2.a. For outfalls[1] equal to or greater than 18 inches (0.46 meter) in diameter or width, samples of stormwater runoff shall be:

i. Collected during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, if within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination; and

ii. Collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

F.2.b. For outfalls equal to or greater than 36 inches (0.91 meter) in diameter or width, samples of stormwater runoff shall be:

i. Collected during the same storm as receiving water samples and analyzed for turbidity, pH, and, if within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination;

ii. Collected during the same storm as receiving water samples and analyzed for the metals in Table 1 (provided at the end of this Attachment) for protection of marine life, California Ocean Plan polynuclear aromatic hydrocarbons (PAHs), currently used pesticides (pyrethroids and organophosphate pesticides), and nutrients (ammonia, nitrate, and phosphates); and

iii. Collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

F.2.c. If an ASBS discharger has no outfall greater than 36 inches, then stormwater runoff from the discharger's largest outfall shall be further collected during the same storm as receiving water samples and analyzed for the metals in Table 1 (provided at the end of this Attachment) for protection of marine life, California Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and organophosphate pesticides), and nutrients (ammonia, nitrate, and phosphates).

F.2.d. For a General Permit applicant not participating in a regional integrated monitoring program (see below in Section G.3), in addition to the sampling requirements in Section F.2.a and b above, a minimum of the two largest outfalls or 20 percent of the larger outfalls, whichever is greater, shall be sampled (flow weighted composite samples) at least three times annually during wet weather (storm event) and analyzed for all Table 2 constituents, Table 1 constituents (Table 1 and 2 constituents are provided at the end of this Attachment) for marine aquatic life protection (except for toxicity, only chronic toxicity for three

1 Outfalls mean a discharge location, including, but not limited to pipes, ditches, swales, and other points of concentrated flow.

species shall be required), dichlorodiphenyltrichloroethane (DDT), polychlorinated biphenyls (PCBs), California Ocean Plan PAHs, organophosphate pesticides, pyrethroids, nitrates, phosphates, and California Ocean Plan indicator bacteria. For parties discharging to an ASBS in more than one Regional Water Board region, at a minimum, one (the largest) such discharge shall be sampled annually in each region.

F.2.e. The Executive Director may reduce or suspend core monitoring once the storm runoff is fully characterized. This determination may be made at any point after the discharge is fully characterized but is best made after the monitoring results from the first permit cycle are assessed.

G. OCEAN RECEIVING WATER AND REFERENCE AREA MONITORING PROGRAM

G.1. All ASBS dischargers must perform ocean receiving water monitoring in addition to performing the Core Discharge Monitoring Program in Section F above. ASBS dischargers may choose either: (1) an individual monitoring program, or (2) participation in a regional integrated monitoring program to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS.

G.2. Individual Monitoring Program

G.2.a. The requirements listed below are for those ASBS dischargers who elect to perform an individual monitoring program to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within the affected ASBS. In addition to Core Discharge Monitoring, the following additional monitoring requirements shall be met.

G.2.a.i. The receiving water at the point of discharge from the outfalls described in Section F.2 above shall be: sampled three times annually during wet weather (storm events); analyzed for Table 1 constituents and Table 2 constituents (provided at the end of this Attachment) for marine aquatic life, DDT, PCBs, California Ocean Plan PAHs, organophosphate pesticides, pyrethroids, nitrates, phosphates, salinity, chronic toxicity (three species), and California Ocean Plan indicator bacteria.

G.2.a.ii. The sample location for the ocean receiving water shall be in the surf zone at the point of discharges; this must be at the same location where stormwater runoff is sampled. Receiving water shall be sampled prior to (pre-storm), and during (or immediately after) the same storm (post-storm). Post-storm sampling shall be representative of the same storm and at approximately the same time as when the runoff is sampled. Reference water quality shall also be sampled three times annually and analyzed for the same constituents as the pre-storm and post-storm sampling, during the same storm seasons when receiving water is sampled. Reference stations will be determined by the State Water Board, Division of Water Quality staff and applicable Regional Water Board(s) staff.

G.2.a.iii. The sediment sampling shall occur at least three times during every five-year period. The subtidal sediment (sand or finer, if present) at the discharge shall be sampled and analyzed for Table 1 constituents (provided at the end of this Attachment) for marine aquatic life, DDT, PCBs, PAHs, pyrethroids, and organophosphate pesticides. Only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed for sediment toxicity testing.

G.2.a.iv. A quantitative survey of intertidal benthic marine life shall be performed at the discharge and reference site(s). The survey shall be performed at least once during every five-year period. The survey design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The results of the survey shall be completed and submitted to the State Water Board and Regional Water Board at least six months prior to the end of the permit cycle.

G.2.a.v. A bioaccumulation study shall be conducted to determine the concentrations of metals and synthetic organic pollutants at representative discharge and reference sites once during each five-year period. The study design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The bioaccumulation study may include California mussels (*Mytilus californianus*) and/or sand crabs (*Emerita analoga* or *Blepharipoda occidentalis*). Based on the study results, the Regional Water Board and the State Water Board's Division of Water Quality, may adjust the study design in subsequent permits, add or modify additional test organisms (such as shore crabs or fish), or modify the study design appropriate for the area and best available sensitive measures of contaminant exposure.

G.2.a.vi. Representative quantitative observations for debris/trash by type and source shall be performed along the coast of the ASBS within the influence of the ASBS discharger's outfall(s). The design, including locations and frequency, of the trash/debris observations is subject to approval by the Regional Water Board and State Water Board's Division of Water Quality.

G.2.a.vii. The monitoring requirements of this section G.2. Individual Monitoring Program, are minimum requirements. After a minimum of one year of continuous water quality monitoring of the discharges and ocean receiving waters, the Executive Director of the State Water Board may require additional monitoring, or adjust, reduce, or suspend receiving water and reference station monitoring. This determination may be made at any point after the discharge and receiving water is fully characterized but is best made after the monitoring results from the first permit cycle are assessed.

G.3. Regional Integrated Monitoring Program

G.3.a. An ASBS discharger may elect to participate in a regional integrated monitoring program, in lieu of an individual monitoring program, to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS. This regional approach shall characterize natural water quality, pre- and post-storm, in-ocean reference areas near the mouths of identified open space watersheds and the effects of the discharges on

natural water quality (physical, chemical, and toxicity) in the ASBS receiving waters, and should include benthic marine aquatic life and bioaccumulation components. The design of the ASBS stratum of a regional integrated monitoring program may deviate from the otherwise required individual monitoring program approach (Section G.2 of this Attachment) if approved by the State Water Board's Executive Director and/or the applicable Regional Water Board(s) Executive Officer(s).

G.3.b. Ocean reference areas shall be located at the drainages of flowing watersheds with minimal development (in no instance more than 10 percent development) and shall not be located in Clean Water Act § 303(d) listed waterbodies or have tributaries that are 303(d) listed. Reference areas shall be free of wastewater discharges and anthropogenic non-stormwater runoff. A minimum of low threat stormwater runoff discharges (e.g., stream highway overpasses and campgrounds) may be approved by the Regional Water Board(s) Executive Officer(s)and the State Water Board Executive Director on a case-by-case basis. Reference areas shall be located in the same region as where the ASBS receiving water monitoring occurs. The reference areas for each region are subject to approval by the participants in the regional integrated monitoring program, the State Water Board Executive Director, and the applicable Regional Water Board(s) Executive Officer(s). A minimum of three ocean reference water samples must be collected from each station, each from a separate storm during the same storm season that receiving water is sampled. A minimum of one reference location shall be sampled for each ASBS receiving water site sampled per responsible party. For parties discharging to an ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

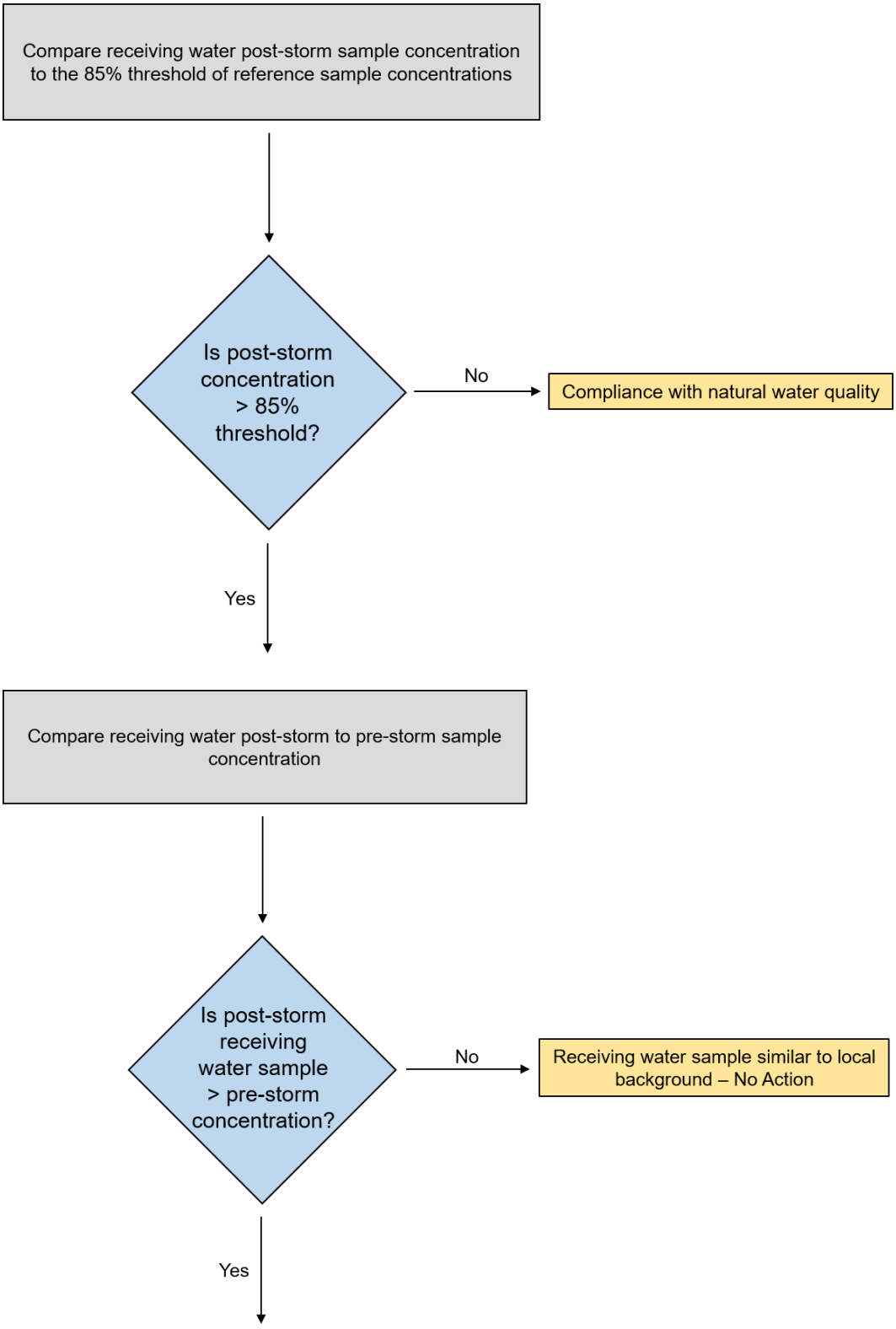
G.3.c. The ASBS ocean receiving water must be sampled in the surf zone at the location where the runoff makes contact with ocean water (i.e., at "point zero"). Ocean receiving water stations must be representative of worst-case discharge conditions (i.e., co-located at a large drain greater than 36 inches, or if drains greater than 36 inches are not present in the ASBS then the largest drain greater than 18 inches.) Ocean receiving water stations are subject to approval by the participants in the regional monitoring program and the State Water Board Executive Director and the applicable Regional Water Board(s) Executive Officer(s). A minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. A minimum of one receiving water location shall be sampled in each ASBS per responsible party in that ASBS. For parties discharging to an ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

G.3.d. Reference and receiving water sampling shall commence during the first full storm season following the adoption of these special conditions, and post-storm samples shall be collected during the same storm event when stormwater runoff is sampled. Sampling shall occur in a minimum of two storm seasons. Sampling may be limited to only one storm season for ASBS dischargers that have already

participated in the Southern California Bight 2008 ASBS regional monitoring effort.

G.3.e. Receiving water and reference samples shall be analyzed for the same constituents as stormwater runoff samples. At a minimum, constituents to be sampled and analyzed in reference and discharge receiving waters must include turbidity, pH, Table 1 metals (provided at the end of this Attachment) for protection of marine life, California Ocean Plan PAHs, pyrethroids, organophosphate pesticides, ammonia, nitrate, phosphates, and critical life stage chronic toxicity for three species. In addition, within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination shall be analyzed. The following flowchart depicts how a discharger determines if their discharge is in compliance with natural water quality.

Flowchart to Determine Compliance with Natural Water Quality



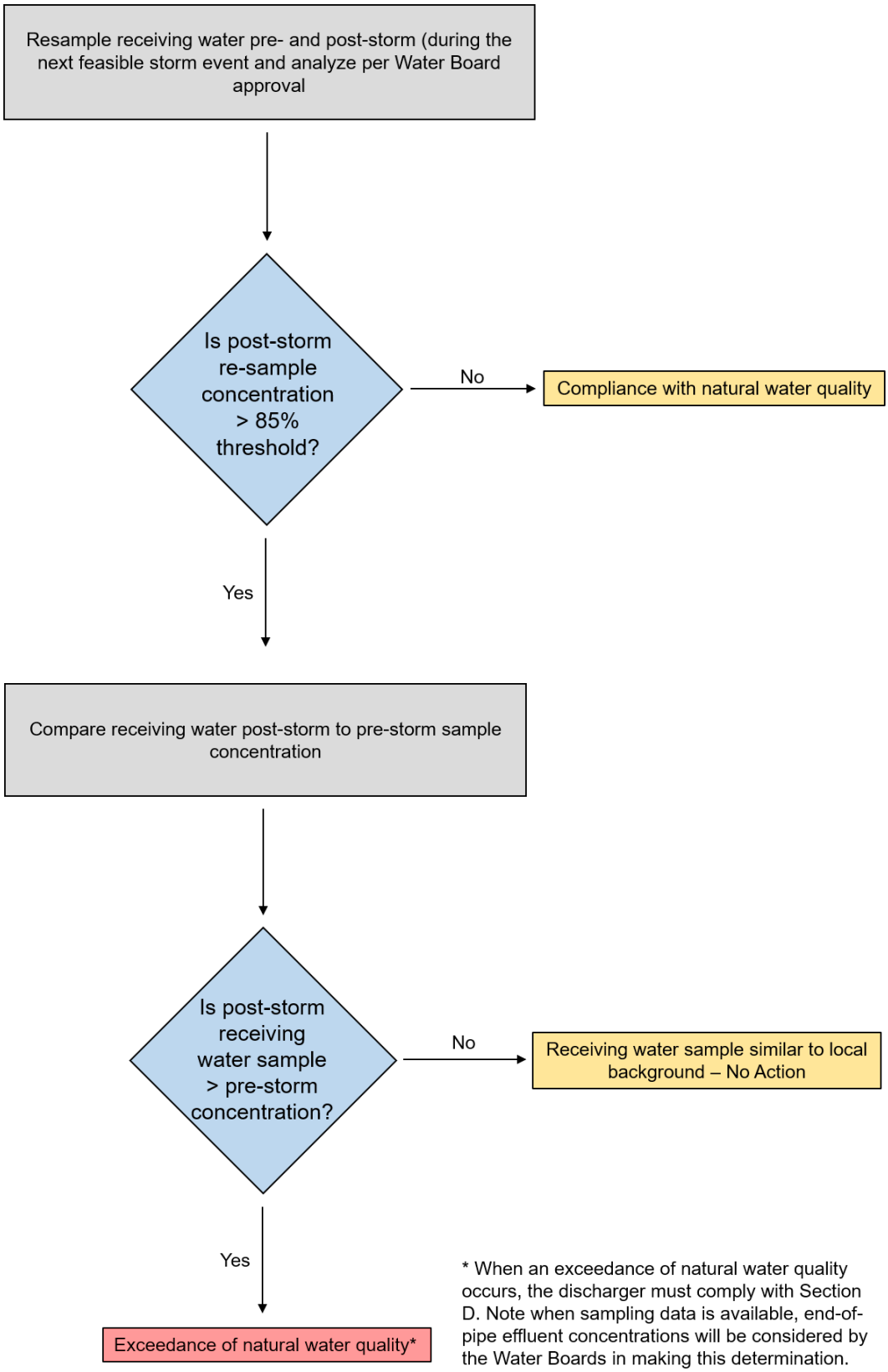

Resample receiving water pre- and post-storm (during the next feasible storm event and analyze per Water Board approval
Is post-storm re-sample concentration > 85% threshold?
No
Compliance with natural water quality
Yes
Compare receiving water post-storm to pre-storm sample concentration
Is post-storm receiving water sample > pre-storm concentration?
No
Receiving water sample similar to local background – No Action
Yes
Exceedance of natural water quality*
* When an exceedance of natural water quality occurs, the discharger must comply with Section D. Note when sampling data is available, end-of-pipe effluent concentrations will be considered by the Water Boards in making this determination.

Table 1 - Monitoring Constituent List
(Excerpted from the 2019 California Ocean Plan Table 3)

Constituent	Units
Arsenic	µg/L
Cadmium	µg/L
Chromium (Hexavalent)	µg/L
Copper	µg/L
Lead	µg/L
Mercury	µg/L
Nickel	µg/L
Selenium	µg/L
Silver	µg/L
Zinc	µg/L
Cyanide	µg/L
Total Chlorine Residual	µg/L
Ammonia (as N)	µg/L
Acute Toxicity	TUa
Chronic Toxicity	TUc
Phenolic Compounds (non-chlorinated)	µg/L
Chlorinated Phenolics	µg/L
Endosulfan	µg/L
Endrin	µg/L
Hexachlorocyclohexane	µg/L
Radioactivity	

Table 2 - Monitoring Constituent List
(Excerpted from the 2019 California Ocean Plan Table 4)

Constituent	Units
Grease and Oil	mg/L
Suspended Solids	mg/L
Settleable Solids	mL/L
Turbidity	NTU
pH	

ATTACHMENT J

DEWATERING REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES
(GENERAL PERMIT)

A. AUTHORIZED CONSTRUCTION DEWATERING DISCHARGES

A.1. Dischargers with dewatering activities subject to a separate NPDES permit for dewatering activities are not subject to the provisions in this Attachment, and shall obtain separate NPDES coverage as required by the State or Regional Water Board. Dischargers shall include in its Stormwater Pollution Prevention Plan (SWPPP), the separate NPDES permit coverage it holds for dewatering discharges.

A.2. Dewatering discharges authorized by this General Permit include mechanical pumping or syphoning of non-potable water from sources including, but not limited to: excavations, trenches, foundations, vaults, groundwater removal specifically related to the construction activities, and/or water collected in impoundments (e.g., ponds, puddles, low points on the active site, or other similar accumulation points).

A.3. This General Permit does not limit the State or Regional Water Boards' authority to modify dewatering discharge requirements upon providing written notice to the discharger, including but not limited to the following:

a. Adding constituents to be monitored;

b. Adding or modifying frequency of monitoring;

c. Adding or modifying sampling locations;

d. Requiring all or part of the discharge to be treated by an active treatment system (in accordance with Attachment F) prior to discharge; and/or

e. Revoking authorization of dewatering dischargers under this General Permit and requiring the discharger to obtain different NPDES permit coverage for dewatering discharges to waters of the United States.

B. GENERAL DEWATERING DISCHARGE REQUIREMENTS

B.1. Dischargers shall comply with the following dewatering discharge requirements:

a. The discharge complies with receiving water limitations in Section IV.D of this General Permit's Order;

b. The discharge is absent of pollutants in quantities that threaten to cause pollution or a nuisance[1];

c. The dewatering activity takes place in an area without known (including, but not limited to information from: Geotracker, local permitting authorities, Water Boards, etc.) soil and/or groundwater contamination where that contamination could cause an exceedance of receiving water limitations;

d. The discharger shall utilize outlet structures that withdraw water from the surface when conducing dewatering activity from sediment basins or similar impoundments, unless infeasible; and

e. The discharger shall cease discharge if necessary, as follows:

   i. Through an automated sampling device capable of ceasing the discharge if a single sample concentration/level exceeds the numeric action level(s); or

   ii. By a Qualified SWPPP Practitioner (QSP) or trained delegate who is present during the operation of the mechanical pumping and/or syphoning of the dewatering activity and is able to halt dewatering if a numeric action level is exceeded for a single sample.

C. DEWATERING DISCHARGE MONITORING REQUIREMENTS

C.1. The discharge shall be analyzed for pH and turbidity at the discharge location within the first hour of discharge and daily for continuous dewatering discharges. Each sample must instantaneously comply with the numerical action levels for pH (within 6.5 – 8.5 standard pH units) and turbidity (250 nephelometric turbidity units);

C.2. Dewatering discharge(s) exceeding the numeric action levels for pH and turbidity shall immediately cease until the dewatering discharge complies with the requirements in Sections B.1.a through e and D.5 and 6.

D. DEWATERING DISCHARGE REPORTING REQUIREMENTS

D.1. At least 24 hours prior to the beginning of a dewatering discharge, the discharger shall notify the applicable Regional Water Board stormwater staff via email[2] of the anticipated dewatering discharge.

D.2. The discharger shall notify the corresponding Regional Water Board and the applicable municipal separate storm sewer system within 24 hours of a discharge occurring if an exception to the requirement to cease discharge, as outlined in Section B.1.e, is necessary to protect human life and health or prevent severe property damage.

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1 40 Code of Federal Regulations section 131.12, and State Water Board Resolution No. 68-16.

2 Regional Water Board stormwater staff contacts listed in Attachment C of this General Permit.

D.3. The Qualified SWPPP Developer (QSD) shall update the site-specific SWPPP on-site at least 24 hours prior to the beginning of a dewatering discharge and upload the amended SWPPP to SMARTS within 14 days with current information required in Section D.4 below, if necessary. The revised SWPPP shall be uploaded as part of a Change of Information through SMARTS.

D.4. The QSD shall include the following site-specific SWPPP updates to address dewatering discharges:

a. On-site BMPs that are selected and implemented:

i. To prevent the dewatering discharge from contacting construction materials or equipment;

ii. That do not use waters of the United States as part of the treatment area, at all areas or points where dewatering is discharged; and

iii. To decelerate the velocity of dewatering discharge (e.g., check dams, sediment traps, riprap, and grouted riprap at outlets);

b. Cleaning and maintenance plan for all dewatering devices and filter media when the pressure equals or exceeds the manufacturer's specifications (if applicable);

c. Site-specific dewatering sampling protocols used to comply with requirements in Section B.1; and

d. A site map depicting the dewatering activity discharge area location(s).

D.5. The discharger shall enter results of all numeric action level (e.g., turbidity and pH) exceedances through SMARTS within 10 days of the field measurements demonstrating the exceedance.

D.6. The QSD shall revise the SWPPP to incorporate immediate corrective actions to prevent further exceedances of the numeric action levels for pH and turbidity, within 10 days of the exceedance.

Appendix H

BMP Fact Sheets



Pacific Gas and Electric Company®

Appendix H

Selected BMP Fact Sheets

Temporary Soil Stabilization BMPs

- EC-1 Scheduling
- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- EC-5 Soil Binders
- EC-7 Geotextiles and Mats
- EC-9 Earth Dikes and Drainage Swales
- EC-14 Compost Blanket
- EC-15 Soil Preparation/Roughening
- EC-16 Non-Vegetative Stabilization

Temporary Sediment Control BMPs

- SE-1 Silt Fence
- SE-2 Sediment Basin
- SE-4 Check Dams
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-7 Street Sweeping and Vacuuming
- SE-10 Storm Drain Inlet Protection
- SE-13 Compost Socks and Berm

Tracking Control BMPs

- TC-1 Stabilized Construction Entrance/Exit
- TC-2 Stabilized Construction Roadway

Wind Erosion Control BMPs

- WE-1 Wind Erosion Control

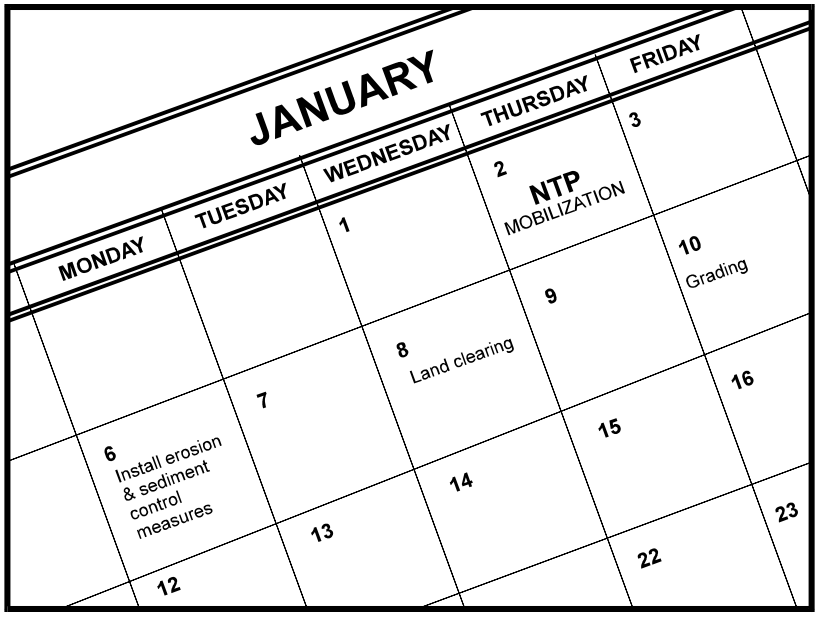
Non-Storm Water Management BMPs

- NS-1 Water Conservation Practices
- NS-3 Paving and Grinding Operations
- NS-6 Illicit Connection/Discharge
- NS-7 Potable Water/Irrigation
- NS-8 Vehicle and Equipment Cleaning
- NS-9 Vehicle and Equipment Fueling
- NS-10 Vehicle and Equipment Maintenance
- NS-12 Concrete Curing
- NS-13 Concrete Finishing

Waste Management BMPs

WM-1	Material Delivery & Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention & Control
WM-5	Solid Waste Management
WM-6	Hazardous Waste Management
WM-7	Contaminated Soil Management
WM-8	Concrete Waste Management
WM-9	Sanitary/Septic Waste Management

Scheduling EC-1



Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.

Categories

EC	Erosion Control	☑
SE	Sediment Control	☒
TC	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.
- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year-round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year-round and retain and maintain rainy season sediment trapping devices in operational condition.

- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.
- Avoid soil disturbance during periods with high wind velocities.

Inspection and Maintenance

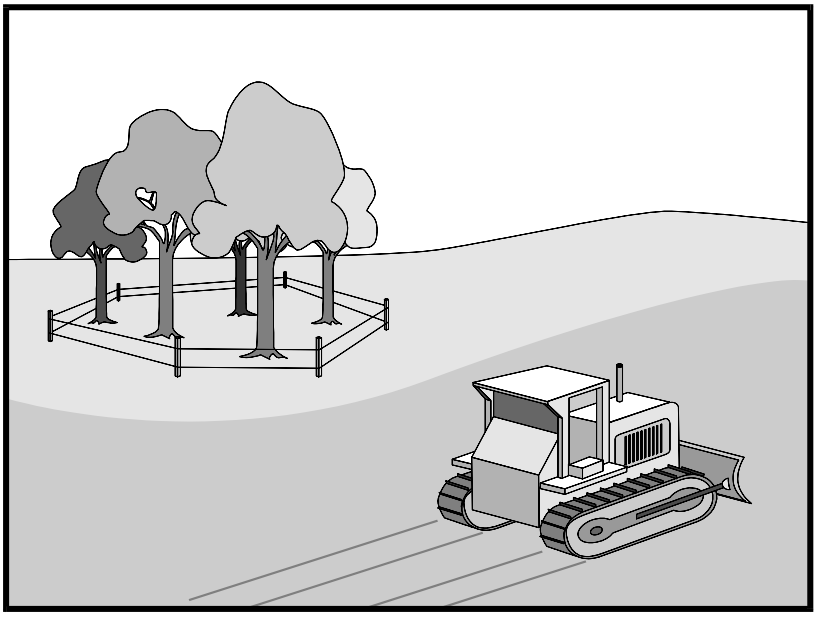
- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Storm Water Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Preservation of Existing Vegetation EC-2



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.
- Protecting existing vegetation buffers and swales.

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Preservation of Existing Vegetation EC-2

Limitations

- Requires forward planning by the owner/developer, contractor, and design staff.
- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Implementation

The best way to prevent erosion is to not disturb the land. In order to reduce the impacts of new development and redevelopment, projects may be designed to avoid disturbing land in sensitive areas of the site (e.g., natural watercourses, steep slopes), and to incorporate unique or desirable existing vegetation into the site's landscaping plan. Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

Existing vegetation to be preserved on the site must be protected from mechanical and other injury while the land is being developed. The purpose of protecting existing vegetation is to ensure the survival of desirable vegetation for shade, beautification, and erosion control. Mature vegetation has extensive root systems that help to hold soil in place, thus reducing erosion. In addition, vegetation helps keep soil from drying rapidly and becoming susceptible to erosion. To effectively save existing vegetation, no disturbances of any kind should be allowed within a defined area around the vegetation. For trees, no construction activity should occur within the drip line of the tree.

Timing

- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Design and Layout

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.

- Consider pruning or mowing vegetation instead of removing it to allow for regrowth.
- If possible, retain vegetation buffer around the site and adjacent waterways.

Inspection and Maintenance

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below should be followed:

- Verify that protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.
- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.
- Cleanly remove the ends of damaged roots with a smooth cut.
- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.
- If bark damage occurs, cut back all loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged area as much as possible.
- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.
- Fertilization:
    - Fertilize trees in the late fall or early spring. Although to note, many native species do not require fertilization.
    - Apply fertilizer to the soil over the feeder roots and in accordance with label instructions, but never closer than 3 ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.
- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

References and Additional Resources

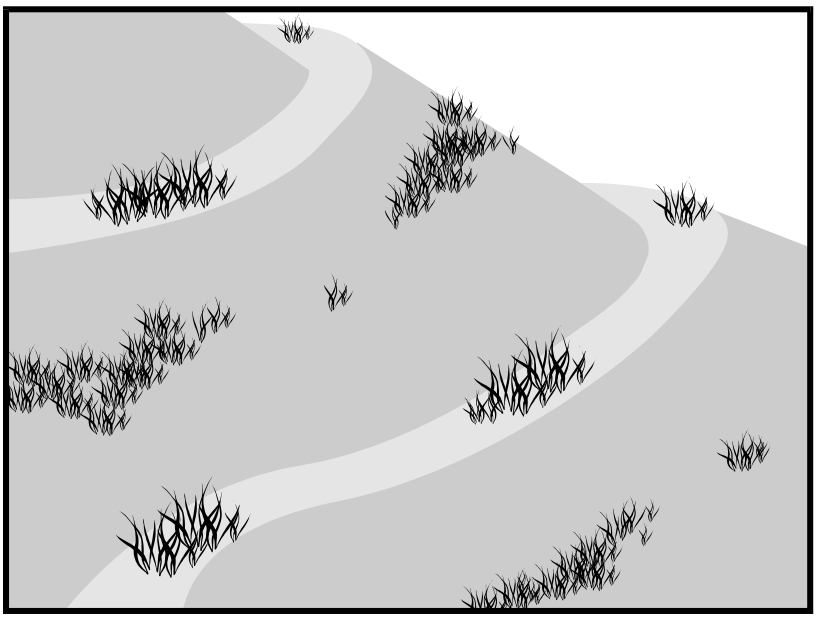
Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

County of Sacramento Tree Preservation Ordinance, September 1981.

Storm Water Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Hydroseeding EC-4



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch

EC-5 Soil Binders

EC-6 Straw Mulch

EC-7 Geotextiles and Mats

EC-8 Wood Mulching

EC-14 Compost Blanket

EC-16 Non-Vegetative Stabilization

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Description and Purpose

Hydroseeding typically consists of applying a mixture of a hydraulic mulch, seed, and water with the possible addition of tackifier, compost, mycorrhizae inoculant, fertilizer, and/or soil conditioner, to temporarily protect exposed soils from erosion by water and wind. Hydraulic seeding, or hydroseeding, is simply the method by which temporary or permanent seed is applied to the soil surface and temporary erosion control is established by means of the mulch component.

Suitable Applications

Hydroseeding is suitable for disturbed areas requiring temporary protection until permanent stabilization is established, for disturbed areas that will be re-disturbed following an extended period of inactivity, or to apply permanent stabilization measures. Hydroseeding without mulch or other cover (e.g., EC-7, Geotextiles and Mats) is not a stand-alone erosion control BMP and should be combined with additional measures until vegetation establishment.

Typical applications for hydroseeding include:

- Disturbed soil/graded areas where permanent stabilization or continued earthwork is not anticipated prior to seed germination.
- Cleared and graded areas exposed to seasonal rains or temporary irrigation.
- To vegetate swales and earthen berms.
- Areas not subject to heavy wear by construction equipment or high traffic.

Limitations

- Availability of hydroseeding equipment may be limited just prior to the rainy season and prior to storms due to high demand.
- Hydraulic seed should be applied with hydraulic mulch or a stand-alone hydroseed application should be followed by one of the following:
    - Straw mulch (see Straw Mulch EC-6)
    - Rolled erosion control products (see Geotextiles and Mats EC-7)
    - Application of Compost Blanket (see Compost Blanket EC-14)

  Hydraulic seed may be used alone only on small flat surfaces when there is sufficient time in the season to ensure adequate vegetation establishment and coverage to provide adequate erosion control.
- Hydraulic seed without mulch does not provide immediate erosion control.
- Temporary seeding may not be appropriate for steep slopes (i.e., slopes readily prone to rill erosion or without sufficient topsoil).
- Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
- Temporary vegetation may have to be removed before permanent vegetation is applied.
- Temporary vegetation may not be appropriate for short term inactivity (i.e., less than 3-6 months).
- Vegetation may not establish when hydroseed is applied to very compact soils.
- Mulch may inhibit germination when applied at high rates.
- This BMP consists of a mixture of several constituents (e.g., fibers/mulches, tackifiers, and other chemical constituents), some of which may be proprietary and may come pre-mixed by the manufacturer. The water quality impacts of these constituents are relatively unknown, and some may have water quality impacts due to their chemical makeup. Additionally, these constituents may require non-visible pollutant monitoring. Refer to specific chemical properties identified in the product's Safety Data Sheet (SDS), although, note that not all SDS's provide ecological information; products should be evaluated for project-specific implementation by the QSD. Refer to fact sheet EC-05, Soil Binders, for further guidance on selecting soil binders.

Implementation

In order to select appropriate hydraulic seed mixtures, an evaluation of site conditions should be performed with respect to:

- Soil conditions
- Site topography and exposure (sun/wind)
- Maintenance requirements
- Sensitive adjacent areas

- Season and climate
- Water availability
- Vegetation types
- Plans for permanent vegetation

The local office of the U.S.D.A. Natural Resources Conservation Service (NRCS), Resource Conservation Districts and Agricultural Extension Service can provide information on appropriate seed mixes.

The following steps should be followed for implementation:

- Where appropriate or feasible, soil should be prepared to receive the seed by disking or otherwise scarifying (See EC-15, Soil Preparation) the surface to eliminate crust, improve air and water infiltration and create a more favorable environment for germination and growth.
- Avoid use of hydraulic seed in areas where the BMP would be incompatible with future earthwork activities.
- Hydraulic seed can be applied using a multiple step or one step process.
  - In a multiple step process, hydraulic seed is applied first, followed by mulch or a Rolled Erosion Control Product (RECP).
  - In the one step process, hydraulic seed is applied with hydraulic mulch in a hydraulic matrix. When the one step process is used to apply the mixture of fiber, seed, etc., the seed rate should be increased to compensate for all seeds not having direct contact with the soil.
- All hydraulically seeded areas should have mulch, or alternate erosion control cover to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow.
- All seeds should be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag should be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test. The container should be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed should be pellet inoculated. Inoculant sources should be species specific and should be applied at a rate of 2 lb of inoculant per 100 lb seed.
- Commercial fertilizer should conform to the requirements of the California Food and Agricultural Code, which can be found at: https://www.cdfa.ca.gov/is/docs/Fertilizer_Law_and_Regs.pdf. Fertilizer should be pelleted or granular form.
- Follow up applications should be made as needed to cover areas of poor coverage or germination/vegetation establishment and to maintain adequate soil protection.
- Avoid over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix B “Guidance on Selection of Temporary Slope Stabilization Techniques” of the CASQA Construction BMP Handbook.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Areas where erosion is evident should be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.
- Where seeds fail to germinate, or they germinate and die, the area must be re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates.
- Irrigation systems, if applicable, should be inspected daily while in use to identify system malfunctions and line breaks. When line breaks are detected, the system must be shut down immediately and breaks repaired before the system is put back into operation.
- Irrigation systems should be inspected for complete coverage and adjusted as needed to maintain complete coverage.

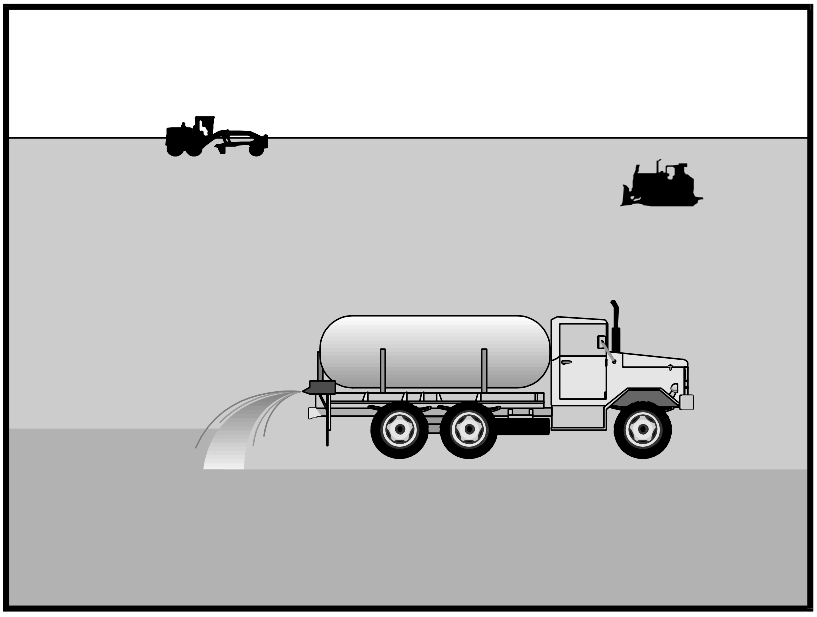
References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Guidance for Temporary Soil Stabilization, California Department of Transportation (Caltrans), July 2003.

Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

Soil Binders EC-5



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch
EC-4 Hydroseeding
EC-6 Straw Mulch
EC-7 Geotextiles and Mats
EC-8 Wood Mulching

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Description and Purpose

Soil binding consists of application and maintenance of a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water and wind induced erosion of exposed soils on construction sites.

Suitable Applications

Soil binders are typically applied to disturbed areas requiring temporary protection. Because soil binders, when used as a stand-alone practice, can often be incorporated into the soil, they are a good alternative to mulches in areas where grading activities will soon resume. Soil binders are commonly used in the following areas:

- Rough graded soils that will be inactive for a short period of time.
- Soil stockpiles.
- Temporary haul roads prior to placement of crushed rock.
- Compacted soil road base.
- Construction staging, materials storage, and layout areas.
- Slopes and areas requiring stabilization prior to rain.
- Disturbed areas subject to high winds.

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Limitations

- Soil binders are temporary in nature and may need reapplication.
- Soil binders require a minimum curing time until fully effective, as prescribed by the manufacturer. Curing time may be 24 hours or longer. Soil binders may need reapplication after a storm event.
- Soil binders will generally experience spot failures during heavy rainfall events. If runoff penetrates the soil at the top of a slope treated with a soil binder, it is likely that the runoff will undercut the stabilized soil layer and discharge at a point further down slope.
- Plant-material-based soil binders do not generally hold up to pedestrian or vehicular traffic across treated areas as well as polymeric emulsion blends or cementitious-based binders.
- Soil binders may not sufficiently penetrate compacted soils.
- Some soil binders are soil texture specific in terms of their effectiveness. For example, polyacrylamides (PAMs) work very well on silt and clayey soils but their performance decreases dramatically in sandy soils.
- Some soil binders may not perform well with low relative humidity. Under rainy conditions, some agents may become slippery or leach out of the soil.
- Soil binders may not cure if low temperatures occur within 24 hours of application.
- The water quality impacts of some chemical soil binders are relatively unknown, and some may have water quality impacts due to their chemical makeup. Additionally, these chemicals may require non-visible pollutant monitoring. Products should be evaluated for project-specific implementation by the QSD preparing SWPPP. Refer to the product Material Safety Data Sheet for chemical properties.

Implementation

General Considerations

- Soil binders should conform to local municipality specifications and requirements.
- Site soil types will dictate appropriate soil binders to be used.
- A soil binder must be environmentally benign (non-toxic to plant and animal life), easy to apply, easy to maintain, economical, and should not stain paved or painted surfaces. Soil binders should not pollute stormwater when cured. Obtain a Safety Data Sheet (SDS) from the manufacturer to ensure non-toxicity (note however, the SDS may not include ecological information).
- Stormwater runoff from PAM treated soils should pass through one of the following sediment control BMP prior to discharging to surface waters.
    - When the total drainage area is greater than or equal to 5 acres, PAM treated areas should drain to a sediment basin.

- Areas less than 5 acres should drain to sediment control BMPs, such as a sediment trap, or a series of check dams. The total number of check dams used should be maximized to achieve the greatest amount of settlement of sediment prior to discharging from the site. Each check dam should be spaced evenly in the drainage channel through which stormwater flows are discharged off site.

- Performance of soil binders depends on temperature, humidity, and traffic across treated areas.
- Avoid over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.
- Some soil binders are designed for application to roads.
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Selecting a Soil Binder

Properties of common soil binders used for erosion control are provided on Table 1 at the end of this Fact Sheet. Use Table 1 to select an appropriate soil binder. Refer to WE-1, Wind Erosion Control, for dust control soil binders.

Factors to consider when selecting a soil binder include the following:

- Suitability to situation - Consider where the soil binder will be applied, if it needs a high resistance to leaching or abrasion, and whether it needs to be compatible with any existing vegetation. Determine the length of time soil stabilization will be needed, and if the soil binder will be placed in an area where it will degrade rapidly. In general, slope steepness is not a discriminating factor for the listed soil binders.
- Soil types and surface materials - Fines and moisture content are key properties of surface materials. Consider a soil binder's ability to penetrate, likelihood of leaching, and ability to form a surface crust on the surface materials.
- Frequency of application - The frequency of application is related to the functional longevity of the binder, which can be affected by subgrade conditions, surface type, climate, and maintenance schedule.
- Frequent applications could lead to high costs. Application frequency may be minimized if the soil binder has good penetration, low evaporation, and good longevity. Consider also that frequent application will require frequent equipment clean up.

Plant-Material-Based (Short Lived, <6 months) Binders

Guar: Guar is a non-toxic, biodegradable, natural galactomannan-based hydrocolloid treated with dispersant agents for easy field mixing. It should be mixed with water at the rate of 11 to 15 lb per 1,000 gallons. Recommended minimum application rates are as follows:

Application Rates for Guar Soil Stabilizer

Slope (H:V):	Flat	4:1	3:1	2:1	1:1
lb/acre:	40	45	50	60	70

Psyllium: Psyllium is composed of the finely ground muciloid coating of plantago seeds that is applied as a dry powder or in a wet slurry to the surface of the soil. It dries to form a firm but rewettable membrane that binds soil particles together but permits germination and growth of seed. Psyllium requires 12 to 18 hours drying time. Application rates should be from 80 to 200 lb/acre, with enough water in solution to allow for a uniform slurry flow.

Starch: Starch is non-ionic, cold water soluble (pre-gelatinized) granular cornstarch. The material is mixed with water and applied at the rate of 150 lb/acre. Approximate drying time is 9 to 12 hours.

Plant-Material-Based (Long Lived, 6-12 months) Binders

Pitch and Rosin Emulsion: Generally, a non-ionic pitch and rosin emulsion has a minimum solids content of 48%. The rosin should be a minimum of 26% of the total solids content. The soil stabilizer should be non-corrosive, water dilutable emulsion that upon application cures to a water insoluble binding and cementing agent. For soil erosion control applications, the emulsion is diluted and should be applied as follows:

- For clayey soil: 5 parts water to 1-part emulsion
- For sandy soil: 10 parts water to 1-part emulsion

Application can be by water truck or hydraulic seeder with the emulsion and product mixture applied at the rate specified by the manufacturer.

Polymeric Emulsion Blend Binders

Acrylic Copolymers and Polymers: Polymeric soil stabilizers should consist of a liquid or solid polymer or copolymer with an acrylic base that contains a minimum of 55% solids. The polymeric compound should be handled and mixed in a manner that will not cause foaming or should contain an anti-foaming agent. The polymeric emulsion should not exceed its shelf life or expiration date; manufacturers should provide the expiration date. Polymeric soil stabilizer should be readily miscible in water, non-injurious to seed or animal life, non-flammable, should provide surface soil stabilization for various soil types without totally inhibiting water infiltration, and should not re-emulsify when cured. The applied compound typically requires 12 to 24 hours drying time. Liquid copolymer should be diluted at a rate of 10 parts water to 1-part polymer and the mixture applied to soil at a rate of 1,175 gallons/acre.

Liquid Polymers of Methacrylates and Acrylates: This material consists of a tackifier/sealer that is a liquid polymer of methacrylates and acrylates. It is an aqueous 100% acrylic emulsion blend of 40% solids by volume that is free from styrene, acetate, vinyl, ethoxylated surfactants or silicates. For soil stabilization applications, it is diluted with water in accordance with the manufacturer's recommendations and applied with a hydraulic seeder at the rate of 20 gallons/acre. Drying time is 12 to 18 hours after application.

Copolymers of Sodium Acrylates and Acrylamides: These materials are non-toxic, dry powders that are copolymers of sodium acrylate and acrylamide. They are mixed with water and applied to the soil surface for erosion control at rates that are determined by slope gradient:

Slope Gradient (H:V)	lb/acre
Flat to 5:1	3.0 – 5.0
5:1 to 3:1	5.0 – 10.0
2:1 to 1:1	10.0 – 20.0

Poly-Acrylamide (PAM) and Copolymer of Acrylamide**:** Linear copolymer polyacrylamide for use as a soil binder is packaged as a dry flowable solid, as a liquid. Refer to the manufacturer's recommendation for dilution and application rates as they vary based on liquid or dry form, site conditions and climate.

- Limitations specific to PAM are as follows:

  - Do not use PAM on a slope that flows into a water body without passing through a sediment trap or sediment basin.

  - The specific PAM copolymer formulation must be anionic. Cationic PAM should not be used in any application because of known aquatic toxicity problems. Only the highest drinking water grade PAM, certified for compliance with ANSI/NSF Standard 60 for drinking water treatment, should be used for soil applications.

  - PAM designated for erosion and sediment control should be "water soluble" or "linear" or "non-cross linked".

  - PAM should not be used as a stand-alone BMP to protect against water-based erosion. When combined with mulch, its effectiveness increases dramatically.

Hydro-Colloid Polymers: Hydro-Colloid Polymers are various combinations of dry flowable poly-acrylamides, copolymers and hydro-colloid polymers that are mixed with water and applied to the soil surface at rates of 55 to 60 lb/acre. Drying times are 0 to 4 hours.

Cementitious-Based Binders

Gypsum: This is a formulated gypsum-based product that readily mixes with water and mulch to form a thin protective crust on the soil surface. It is composed of high purity gypsum that is ground, calcined and processed into calcium sulfate hemihydrate with a minimum purity of 86%. It is mixed in a hydraulic seeder and applied at rates 4,000 to 12,000 lb/acre. Drying time is 4 to 8 hours.

Applying Soil Binders

After selecting an appropriate soil binder, the untreated soil surface must be prepared before applying the soil binder. The untreated soil surface must contain sufficient moisture to assist the agent in achieving uniform distribution. In general, the following steps should be followed:

- Follow manufacturer's written recommendations for application rates, pre-wetting of application area, and cleaning of equipment after use.
- Prior to application, roughen embankment and fill areas.
- Consider the drying time for the selected soil binder and apply with sufficient time before anticipated rainfall. Soil binders should not be applied during or immediately before rainfall.
- Avoid over spray onto roads, sidewalks, drainage channels, sound walls, existing vegetation, etc.
- Soil binders should not be applied to frozen soil, areas with standing water, under freezing or rainy conditions, or when the temperature is below 40°F during the curing period.
- More than one treatment is often necessary, although the second treatment may be diluted or have a lower application rate.
- Generally, soil binders require a minimum curing time of 24 hours before they are fully effective. Refer to manufacturer's instructions for specific cure time.
- For liquid agents:
  - Crown or slope ground to avoid ponding.
  - Uniformly pre-wet ground at 0.03 to 0.3 gal/yd^2 or according to manufacturer's recommendations.
  - Apply solution under pressure. Overlap solution 6 to 12 in.
  - Allow treated area to cure for the time recommended by the manufacturer; typically, at least 24 hours.
  - Apply second treatment before first treatment becomes ineffective, using 50% application rate.
  - In low humidities, reactivate chemicals by re-wetting with water at 0.1 to 0.2 gal/yd^2.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Areas where erosion is evident should be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.
- Reapply the selected soil binder as needed to maintain effectiveness.

Table 1 Properties of Soil Binders for Erosion Control

Evaluation Criteria	Binder Type			
	Plant Material Based (Short Lived)	**Plant Material Based (Long Lived)**	**Polymeric Emulsion Blends**	**Cementitious-Based Binders**
Relative Cost	Low	Moderate to High	Low to High	Low to Moderate
Resistance to Leaching	High	High	Low to Moderate	Moderate
Resistance to Abrasion	Moderate	Low	Moderate to High	Moderate to High
Longevity	Short to Medium	Medium	Medium to Long	Medium
Minimum Curing Time before Rain	9 to 18 hours	19 to 24 hours	0 to 24 hours	4 to 8 hours
Compatibility with Existing Vegetation	Good	Poor	Poor	Poor
Mode of Degradation	Biodegradable	Biodegradable	Photodegradable/ Chemically Degradable	Photodegradable/ Chemically Degradable
Labor Intensive	No	No	No	No
Specialized Application Equipment	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher
Liquid/Powder	Powder	Liquid	Liquid/Powder	Powder
Surface Crusting	Yes, but dissolves on rewetting	Yes	Yes, but dissolves on rewetting	Yes
Clean Up	Water	Water	Water	Water
Erosion Control Application Rate	Varies (1)	Varies (1)	Varies (1)	4,000 to 12,000 lbs/acre

(1) See Implementation for specific rates.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Erosion Control Pilot Study Report, State of California Department of Transportation (Caltrans), June 2000.

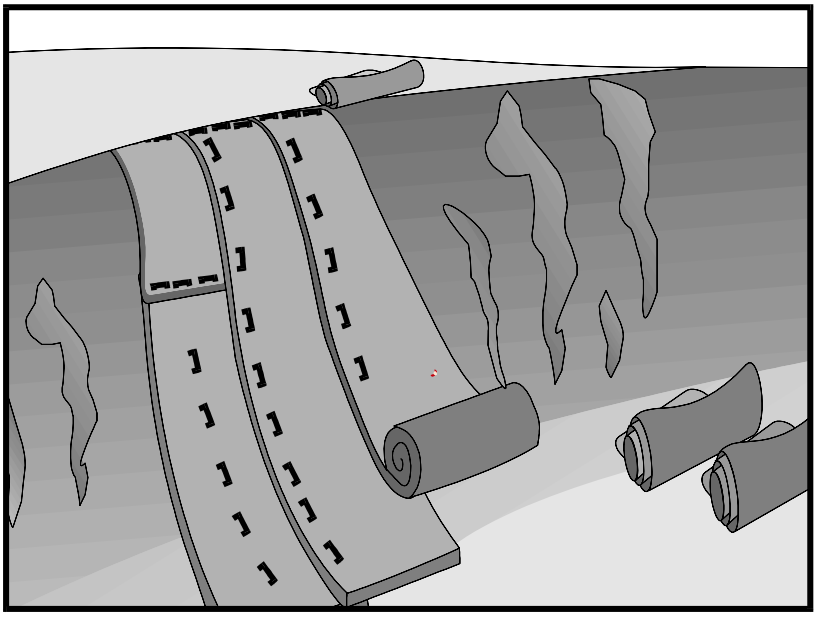
Guidance for Temporary Soil Stabilization, California Department of Transportation (Caltrans), July 2003.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Sedimentation and Erosion Control, An Inventory of Current Practices Draft, US EPA, April 1990.

Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Geotextiles and Mats EC-7



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch

EC-4 Hydroseeding

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Description and Purpose

Rolled Erosion Control Products (RECPs), also known as erosion control matting or blankets, can be made of natural or synthetic materials or a combination of the two. RECPs are used to cover the soil surface to reduce erosion from rainfall impact, hold soil in place, and absorb and hold moisture near the soil surface. Additionally, RECPs may be used to stabilize soils until vegetation is established or to reinforce non-woody surface vegetation.

Suitable Applications

RECPs are typically applied on slopes where erosion hazard is high, and vegetation will be slow to establish. Mattings are also used on stream banks, swales and other drainage channels where moving water at velocities between 3 ft/s and 6 ft/s are likely to cause scour and wash out new vegetation and in areas where the soil surface is disturbed and where existing vegetation has been removed. RECPs may also be used when seeding cannot occur (e.g., late season construction and/or the arrival of an early rain season). RECPs should be considered when the soils are fine grained and potentially erosive. RECPs should be considered in the following situations:

- Steep slopes, generally steeper than 3:1 (H:V).
- Long slopes.
- Slopes where the erosion potential is high.
- Slopes and disturbed soils where mulch must be anchored.

- Disturbed areas where temporary cover is needed, or plants are slow to establish or will not establish.
- Channels with flows exceeding 3.3 ft/s.
- Channels to be vegetated.
- Stockpiles.
- Slopes adjacent to water bodies.

Limitations

- RECP installed costs are generally higher than other erosion control BMPs, limiting their use to areas where other BMPs are ineffective (e.g., channels, steep slopes).
- RECPs may delay seed germination, due to reduction in soil temperature and/or sunlight.
- RECPs are generally not suitable for excessively rocky sites or areas where the final vegetation will be mowed (since staples and netting can catch in mowers). If a staple or pin cannot be driven into the soil because the underlying soil is too hard or rocky, then an alternative BMP should be selected.
- If used for temporary erosion control, RECPs should be removed and disposed of prior to application of permanent soil stabilization measures.
- The use of plastic sheeting should be limited to covering stockpiles or very small graded areas for short periods of time (such as through one imminent storm event) until other measures, such as seeding and mulching, may be installed.
    - Plastic sheeting is easily vandalized, easily torn, photodegradable, and must be disposed of at a landfill.
    - Plastic sheeting results in 100% runoff, which may cause serious erosion problems in the areas receiving the increased flow.
- According to the State Water Board's *CGP Review, Issue #2*, only RECPs that either do not contain plastic netting or contain netting manufactured from 100% biodegradable non-plastic materials, such as jute, sisal, or coir fiber should be used due to plastic pollution and wildlife concerns. If a plastic-netted product is used for temporary stabilization, it must be promptly removed when no longer needed and removed or replaced with non-plastic netted RECPs for final stabilization.
- RECPs may have limitations based on soil type, slope gradient, or channel flow rate; consult the manufacturer for proper selection.
- Not suitable for areas that have foot traffic (tripping hazard) – e.g., pad areas around buildings under construction.
- RECPs that incorporate a plastic netting (e.g. straw blanket typically uses a plastic netting to hold the straw in place) may not be suitable near known wildlife habitat. Wildlife can become trapped in the plastic netting. As per State Water Board guidance, RECPs that

contain plastic netting are discouraged for temporary controls and are not acceptable alternatives for permanent controls. RECPs that do not contain plastic netting or contain netting manufactured from 100% biodegradable non-plastic materials such as jute, sisal, or coir fiber should be used.

- RECPs may have limitations in extremely windy climates; they are susceptible to wind damage and displacement. However, when RECPs are properly trenched at the top and bottom and stapled in accordance with the manufacturer's recommendations, problems with wind can be minimized.

Implementation

Material Selection

- Natural RECPs have been found to be effective where re-vegetation will be provided by re-seeding. The choice of material should be based on the size of area, side slopes, surface conditions such as hardness, moisture, weed growth, and availability of materials.

- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix B "Guidance on Selection of Temporary Slope Stabilization Techniques" of the CASQA Construction BMP Handbook.

- The following natural and synthetic RECPs are commonly used:

Geotextiles

- Material can be a woven or a non-woven polypropylene fabric with minimum thickness of 0.06 in., minimum width of 12 ft and should have minimum tensile strength of 150 lbs (warp), 80 lbs (fill) in conformance with the requirements in ASTM Designation: D 4632. The permittivity of the fabric should be approximately 0.07 sec^{-1} in conformance with the requirements in ASTM Designation: D4491. The fabric should have an ultraviolet (UV) stability of 70 percent in conformance with the requirements in ASTM designation: D4355. Geotextile blankets must be secured in place with wire staples or sandbags and by keying into tops of slopes to prevent infiltration of surface waters under geotextile. Staples should be made of minimum 11-gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- Geotextiles may be reused if they are suitable for the use intended.

Plastic Covers

- Generally plastic sheeting should only be used as stockpile covering or for very small graded areas for short periods of time (such as through one imminent storm event). If plastic sheeting must be used, choose a plastic that will withstand photo degradation.

- Plastic sheeting should have a minimum thickness of 6 mils and must be keyed in at the top of slope (when used as a temporary slope protection) and firmly held in place with sandbags or other weights placed no more than 10 ft apart. Seams are typically taped or weighted down their entire length, and there should be at least a 12 in. to 24 in. overlap of all seams. Edges should be embedded a minimum of 6 in. in soil (when used as a temporary slope protection).

- All sheeting must be inspected periodically after installation and after significant rainstorms to check for erosion, undermining, and anchorage failure. Any failures must be repaired immediately. If washout or breakages occur, the material should be re-installed after repairing the damage to the slope.

Erosion Control Blankets/Mats

- Biodegradable RECPs are typically composed of jute fibers, curled wood fibers, straw, coconut fiber, or a combination of these materials. In order for an RECP to be considered 100% biodegradable, the netting, sewing or adhesive system that holds the biodegradable mulch fibers together must also be biodegradable. See typical installation details at the end of this fact sheet.

  - **Jute** is a natural fiber that is made into a yarn that is loosely woven into a biodegradable mesh. The performance of jute as a stand-alone RECP is low. Most other RECPs outperform jute as a temporary erosion control product and therefore jute is not commonly used. It is designed to be used in conjunction with vegetation. The material is supplied in rolled strips, which should be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Excelsior** (curled wood fiber) blanket material should consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 6 in. or longer. The excelsior blanket should be of consistent thickness. The wood fiber must be evenly distributed over the entire area of the blanket. The top surface of the blanket should be covered with a photodegradable extruded plastic mesh. The blanket should be smolder resistant without the use of chemical additives and should be non-toxic and non-injurious to plant and animal life. Excelsior blankets should be furnished in rolled strips, a minimum of 48 in. wide, and should have an average weight of 0.8 lb/yd^2, ±10 percent, at the time of manufacture. Excelsior blankets must be secured in place with wire staples. Staples should be made of minimum 11-gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

  - **Straw blanket** should be machine produced mats of straw with a lightweight biodegradable netting top layer. The straw should be attached to the netting with biodegradable thread or glue strips. The straw blanket should be of consistent thickness. The straw should be evenly distributed over the entire area of the blanket. Straw blanket should be furnished in rolled strips a minimum of 6.5 ft wide, a minimum of 80 ft long and a minimum of 0.5 lb/yd^2. Straw blankets must be secured in place with wire staples. Staples should be made of minimum 11-gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

  - **Wood fiber blanket** is composed of biodegradable fiber mulch with extruded plastic netting held together with adhesives. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured to the ground with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Coconut fiber blanket** should be a machine produced mat of 100 percent coconut fiber with biodegradable netting on the top and bottom. The coconut fiber should be attached to the netting with biodegradable thread or glue strips. The coconut fiber blanket should be of consistent thickness. The coconut fiber should be evenly distributed

over the entire area of the blanket. Coconut fiber blanket should be furnished in rolled strips with a minimum of 6.5 ft wide, a minimum of 80 ft. long and a minimum of 0.5 lb/yd^2. Coconut fiber blankets must be secured in place with wire staples. Staples should be made of minimum 11-gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- **Coconut fiber mesh** is a thin permeable membrane made from coconut or corn fiber that is spun into a yarn and woven into a biodegradable mat. It is designed to be used in conjunction with vegetation and typically has longevity of several years. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Straw coconut fiber blanket** should be machine produced mats of 70 percent straw and 30 percent coconut fiber with a biodegradable netting top layer and a biodegradable bottom net. The straw and coconut fiber should be attached to the netting with biodegradable thread or glue strips. The straw coconut fiber blanket should be of consistent thickness. The straw and coconut fiber should be evenly distributed over the entire area of the blanket. Straw coconut fiber blanket should be furnished in rolled strips a minimum of 6.5 ft wide, a minimum of 80 ft long and a minimum of 0.5 lb/yd^2. Straw coconut fiber blankets must be secured in place with wire staples. Staples should be made of minimum 11-gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- Non-biodegradable RECPs are typically composed of polypropylene, polyethylene, nylon or other synthetic fibers. In some cases, a combination of biodegradable and synthetic fibers is used to construct the RECP. Netting used to hold these fibers together is typically non-biodegradable as well. Only biodegradable RECPs can remain on a site applying for a Notice of Termination due to plastic pollution and wild life concerns (State Waterboard, 2016). RECPs containing plastic that are used on a site must be disposed of for final stabilization.

  - **Plastic netting** is a lightweight biaxially oriented netting designed for securing loose mulches like straw or paper to soil surfaces to establish vegetation. The netting is photodegradable. The netting is supplied in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Plastic mesh** is an open weave geotextile that is composed of an extruded synthetic fiber woven into a mesh with an opening size of less than ¼ in. It is used with re-vegetation or may be used to secure loose fiber such as straw to the ground. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Synthetic fiber with netting** is a mat that is composed of durable synthetic fibers treated to resist chemicals and ultraviolet light. The mat is a dense, three-dimensional mesh of synthetic (typically polyolefin) fibers stitched between two polypropylene nets. The mats are designed to be re-vegetated and provide a permanent composite system of soil, roots, and geomatrix. The material is furnished in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Bonded synthetic fibers** consist of a three-dimensional geometric nylon (or other synthetic) matting. Typically, it has more than 90 percent open area, which facilitates root growth. It's tough root reinforcing system anchors vegetation and protects against hydraulic lift and shear forces created by high volume discharges. It can be installed over prepared soil, followed by seeding into the mat. Once vegetated, it becomes an invisible composite system of soil, roots, and geomatrix. The material is furnished in rolled strips that must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Combination synthetic and biodegradable RECPs** consist of biodegradable fibers, such as wood fiber or coconut fiber, with a heavy polypropylene net stitched to the top and a high strength continuous filament geomatrix or net stitched to the bottom. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Site Preparation

- Proper soil preparation is essential to ensure complete contact of the RECP with the soil. Soil Roughening is not recommended in areas where RECPs will be installed.
- Grade and shape the area of installation.
- Remove all rocks, clods, vegetation or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.
- Prepare seedbed by loosening 2 to 3 in. of topsoil.

Seeding/Planting

Seed the area before blanket installation for erosion control and re-vegetation. Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all areas disturbed during blanket installation must be re-seeded. Where soil filling is specified for turf reinforcement mats (TRMs), seed the matting and the entire disturbed area after installation and prior to filling the mat with soil.

Fertilize and seed in accordance with seeding specifications or other types of landscaping plans. The protective matting can be laid over areas where grass has been planted and the seedlings have emerged. Where vines or other ground covers are to be planted, lay the protective matting first and then plant through matting according to design of planting.

Check Slots

Check slots shall be installed as required by the manufacturer.

Laying and Securing Matting

- Before laying the matting, all check slots should be installed and the seedbed should be friable, made free from clods, rocks, and roots. The surface should be compacted and finished according to the requirements of the manufacturer's recommendations.

- Mechanical or manual lay down equipment should be capable of handling full rolls of fabric and laying the fabric smoothly without wrinkles or folds. The equipment should meet the fabric manufacturer's recommendations or equivalent standards.

Anchoring

- U-shaped wire staples, metal geotextile stake pins, or triangular wooden stakes can be used to anchor mats and blankets to the ground surface.
- Wire staples should be made of minimum 11-gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.
- Metal stake pins should be 0.188 in. diameter steel with a 1.5 in. steel washer at the head of the pin, and 8 in. in length.
- Wire staples and metal stakes should be driven flush to the soil surface.

Installation on Slopes

Installation should be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Begin at the top of the slope and anchor the blanket in a 6 in. deep by 6 in. wide trench. Backfill trench and tamp earth firmly.
- Unroll blanket down slope in the direction of water flow.
- Overlap the edges of adjacent parallel rolls 2 to 3 in. and staple every 3 ft (or greater, per manufacturer's specifications).
- When blankets must be spliced, place blankets end over end (shingle style) with 6 in. overlap. Staple through overlapped area, approximately 12 in. apart.
- Lay blankets loosely and maintain direct contact with the soil. Do not stretch.
- Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples should be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 (H:V) to 2:1 (H:V), require a minimum of 2 staples/yd^2. Moderate slopes, 2:1 (H:V) to 3:1 (H:V), require a minimum of 1 ½ staples/yd^2. Check manufacturer's specifications to determine if a higher density staple pattern is required.

Installation in Channels

Installation should be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Dig initial anchor trench 12 in. deep and 6 in. wide across the channel at the lower end of the project area.
- Excavate intermittent check slots, 6 in. deep and 6 in. wide across the channel at 25 to 30 ft intervals along the channels.

- Cut longitudinal channel anchor trenches 4 in. deep and 4 in. wide along each side of the installation to bury edges of matting, whenever possible extend matting 2 to 3 in. above the crest of the channel side slopes.
- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 12 in. intervals. Note: matting will initially be upside down in anchor trench.
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 3 in.
- Secure these initial ends of mats with anchors at 12 in. intervals, backfill and compact soil.
- Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 3 in. overlap.
- Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 12 in. intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench.
- Alternate method for non-critical installations: Place two rows of anchors on 6 in. centers at 25 to 30 ft. intervals in lieu of excavated check slots.
- Staple shingled lap spliced ends a minimum of 12 in. apart on 12 in. intervals.
- Place edges of outside mats in previously excavated longitudinal slots; anchor using prescribed staple pattern, backfill, and compact soil.
- Anchor, fill, and compact upstream end of mat in a 12 in. by 6 in. terminal trench.
- Secure mat to ground surface using U-shaped wire staples, geotextile pins, or wooden stakes.
- Seed and fill turf reinforcement matting with soil, if specified.

Soil Filling (if specified for turf reinforcement mat (TRM))

Installation should be in accordance with the manufacturer's recommendations. Typical installation guidelines are as follows:

- After seeding, spread and lightly rake ½-3/4 inches of fine topsoil into the TRM apertures to completely fill TRM thickness. Use backside of rake or other flat implement.
- Alternatively, if allowed by product specifications, spread topsoil using lightweight loader, backhoe, or other power equipment. Avoid sharp turns with equipment.
- Always consult the manufacturer's recommendations for installation.
- Do not drive tracked or heavy equipment over mat.
- Avoid any traffic over matting if loose or wet soil conditions exist.

- Use shovels, rakes, or brooms for fine grading and touch up.
- Smooth out soil filling just exposing top netting of mat.

Temporary Soil Stabilization Removal

- Temporary soil stabilization removed from the site of the work must be disposed of if necessary.

Inspection and Maintenance

- RECPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Areas where erosion is evident shall be repaired and BMPs reapplied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require reapplication of BMPs.
- If washout or breakage occurs, re-install the material after repairing the damage to the slope or channel.
- Make sure matting is uniformly in contact with the soil.
- Check that all the lap joints are secure.
- Check that staples are flush with the ground.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

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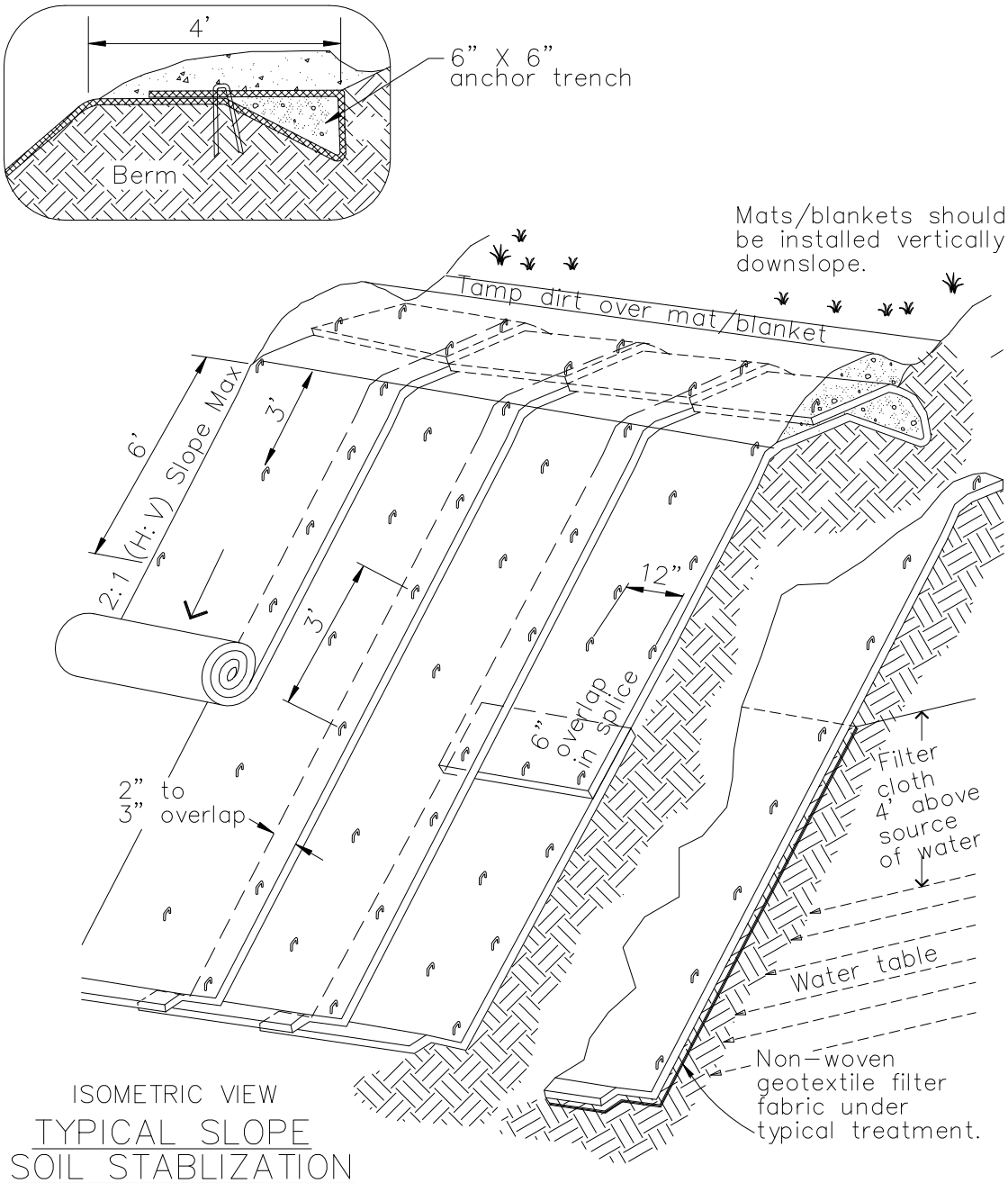
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ISOMETRIC VIEW

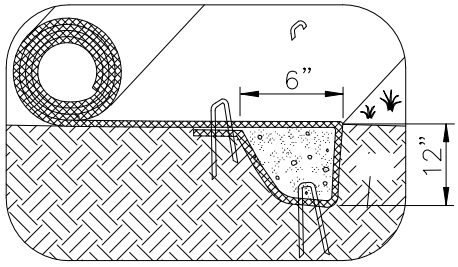
TYPICAL SLOPE
SOIL STABLIZATION
NTS

WET SLOPE LINING
NTS

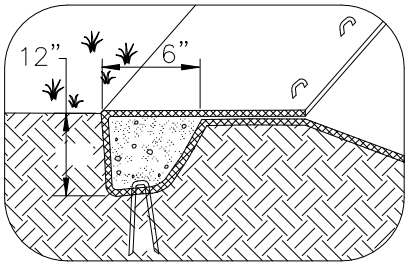
NOTES:

1. Slope surface shall be free of rocks, clods, sticks and grass. Mats/blankets shall have good soil contact.
2. Lay blankets loosely and stake or staple to maintain direct contact with the soil. Do not stretch.
3. Install per manufacturer's recommendations

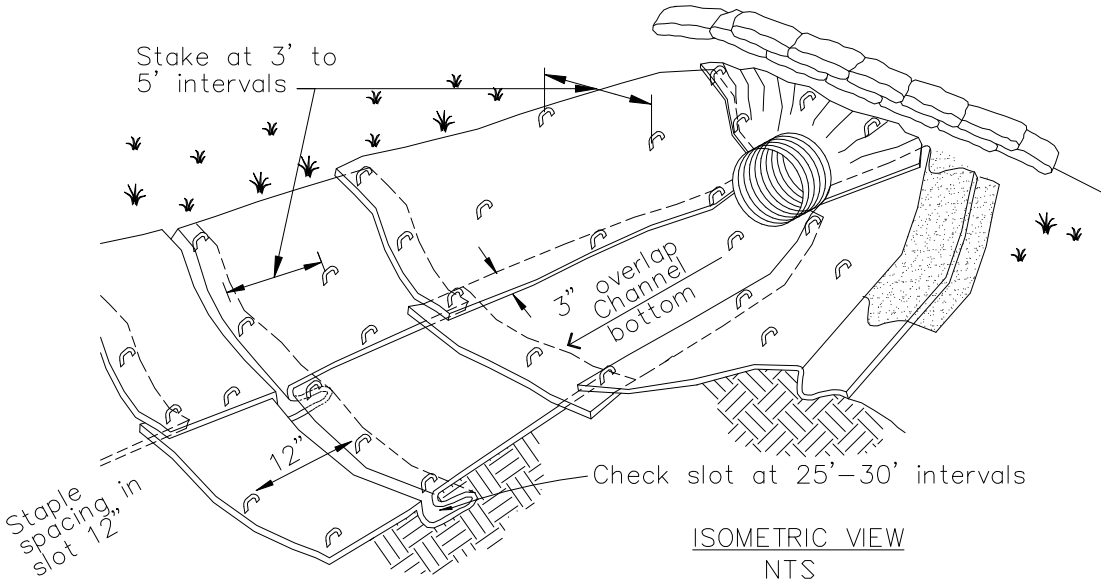
TYPICAL INSTALLATION DETAIL



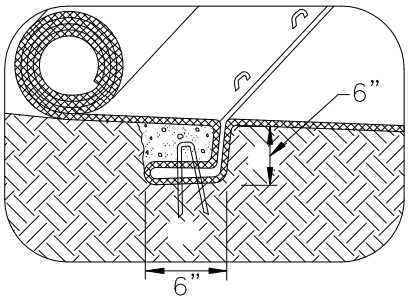
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NTS



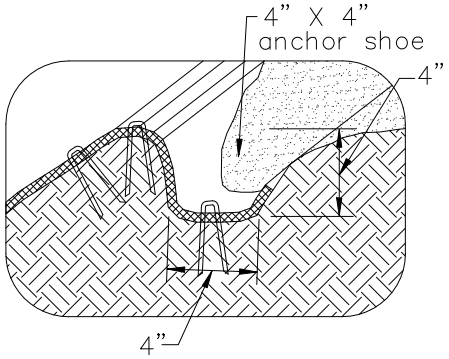
TERMINAL SLOPE AND CHANNEL ANCHOR TRENCH
NTS



ISOMETRIC VIEW
NTS



INTERMITTENT CHECK SLOT
NTS

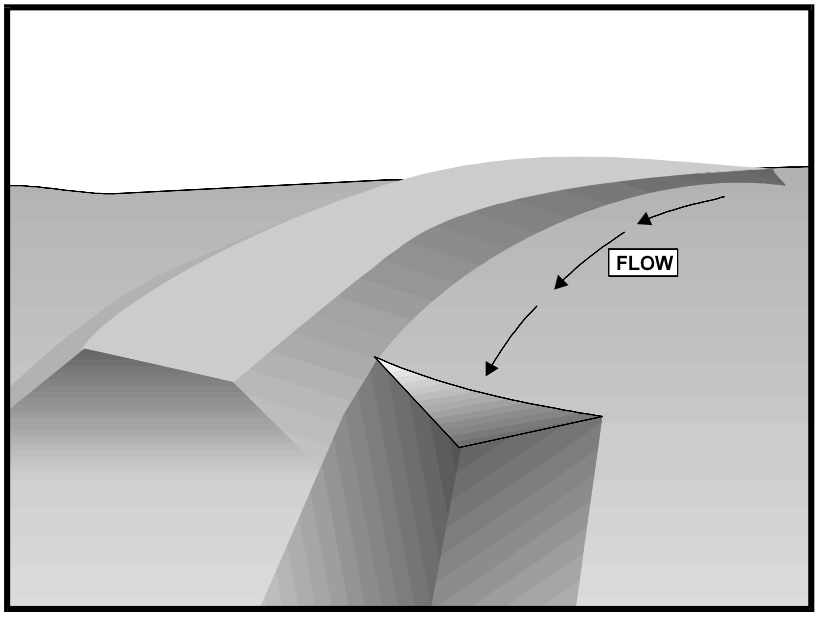


LONGITUDINAL ANCHOR TRENCH
NTS

NOTES:
1. Check slots to be constructed per manufacturers specifications.
2. Staking or stapling layout per manufacturers specifications.
3. Install per manufacturer's recommendations

TYPICAL INSTALLATION DETAIL

Earth Dikes and Drainage Swales EC-9



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

An earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

Suitable Applications

Earth dikes and drainage swales are suitable for use, individually or together, where runoff needs to be diverted from one area and conveyed to another.

- Earth dikes and drainage swales may be used:
  - To convey surface runoff down sloping land
  - To intercept and divert runoff to avoid sheet flow over sloped surfaces
  - To divert and direct runoff towards a stabilized watercourse, drainage pipe or channel
  - To intercept runoff from paved surfaces
  - To intercept and divert run-on
  - Below steep grades where runoff begins to concentrate

- Along roadways and facility improvements subject to flood drainage
- At the top of slopes to divert runon from adjacent or undisturbed slopes
- At bottom and mid slope locations to intercept sheet flow and convey concentrated flows
- Divert sediment laden runoff into sediment basins or traps

Limitations

Dikes should not be used for drainage areas greater than 10 acres or along slopes greater than 10 percent. For larger areas more permanent drainage structures should be built. All drainage structures should be built in compliance with local municipal requirements.

- Earth dikes may create more disturbed area on site and become barriers to construction equipment.
- Earth dikes must be stabilized immediately, which adds cost and maintenance concerns.
- Diverted stormwater may cause downstream flood damage.
- Dikes should not be constructed of soils that may be easily eroded.
- Regrading the site to remove the dike may add additional cost.
- Temporary drains and swales or any other diversion of runoff should not adversely impact upstream or downstream properties.
- Temporary drains and swales must conform to local floodplain management requirements.
- Earth dikes/drainage swales are not suitable as sediment trapping devices.
- It may be necessary to use other soil stabilization and sediment controls such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales, and ditches.
- Sediment accumulation, scour depressions, and/or persistent non-stormwater discharges can result in areas of standing water suitable for mosquito production in drainage swales.

Implementation

The temporary earth dike is a berm or ridge of compacted soil, located in such a manner as to divert stormwater to a sediment trapping device or a stabilized outlet, thereby reducing the potential for erosion and offsite sedimentation. Earth dikes can also be used to divert runoff from off site and from undisturbed areas away from disturbed areas and to divert sheet flows away from unprotected slopes.

An earth dike does not itself control erosion or remove sediment from runoff. A dike prevents erosion by directing runoff to an erosion control device such as a sediment trap or directing runoff away from an erodible area. Temporary diversion dikes should not adversely impact adjacent properties and must conform to local floodplain management regulations and should not be used in areas with slopes steeper than 10%.

Earth Dikes and Drainage Swales EC-9

Slopes that are formed during cut and fill operations should be protected from erosion by runoff. A combination of a temporary drainage swale and an earth dike at the top of a slope can divert runoff to a location where it can be brought to the bottom of the slope (see EC-11, Slope Drains). A combination dike and swale is easily constructed by a single pass of a bulldozer or grader and compacted by a second pass of the tracks or wheels over the ridge. Diversion structures should be installed when the site is initially graded and remain in place until post construction BMPs are installed and the slopes are stabilized.

Diversion practices concentrate surface runoff, increasing its velocity and erosive force. Thus, the flow out of the drain or swale must be directed onto a stabilized area or into a grade stabilization structure. If significant erosion will occur, a swale should be stabilized using vegetation, chemical treatment, rock rip-rap, matting, or other physical means of stabilization. Any drain or swale that conveys sediment laden runoff must be diverted into a sediment basin or trap before it is discharged from the site.

General

- Care must be applied to correctly size and locate earth dikes, drainage swales. Excessively steep, unlined dikes, and swales are subject to erosion and gully formation.
- Conveyances should be stabilized.
- Use a lined ditch for high flow velocities.
- Select flow velocity based on careful evaluation of the risks due to erosion of the measure, soil types, overtopping, flow backups, washout, and drainage flow patterns for each project site.
- Compact any fills to prevent unequal settlement.
- Do not divert runoff onto other property without securing written authorization from the property owner.
- When possible, install and utilize permanent dikes, swales, and ditches early in the construction process.
- Provide stabilized outlets.

Earth Dikes

Temporary earth dikes are a practical, inexpensive BMP used to divert stormwater runoff. Temporary diversion dikes should be installed in the following manner:

- All dikes should be compacted by earth moving equipment.
- All dikes should have positive drainage to an outlet.
- All dikes should have 2:1 or flatter side slopes, 18 in. minimum height, and a minimum top width of 24 in. Wide top widths and flat slopes are usually needed at crossings for construction traffic.

- May be covered with hydro mulch, hydroseed, wood mulch, compost blanket, or RECP for stabilization.
- The outlet from the earth dike must function with a minimum of erosion. Runoff should be conveyed to a sediment trapping device such as a Sediment Trap (SE-3) or Sediment Basin (SE-2) when either the dike channel or the drainage area above the dike are not adequately stabilized.
- Temporary stabilization may be achieved using seed and mulching for slopes less than 5% and either rip-rap or sod for slopes in excess of 5%. In either case, stabilization of the earth dike should be completed immediately after construction or prior to the first rain.
- If riprap is used to stabilize the channel formed along the toe of the dike, the following typical specifications apply:

Channel Grade	Riprap Stabilization
0.5-1.0%	4 in. Rock
1.1-2.0%	6 in. Rock
2.1-4.0%	8 in. Rock
4.1-5.0%	8 in. -12 in. Riprap

- The stone riprap, recycled concrete, etc. used for stabilization should be pressed into the soil with construction equipment.
- Filter cloth may be used to cover dikes in use for long periods.
- Construction activity on the earth dike should be kept to a minimum.

Drainage Swales

Drainage swales are only effective if they are properly installed. Swales are more effective than dikes because they tend to be more stable. The combination of a swale with a dike on the downhill side is the most cost-effective diversion.

Standard engineering design criteria for small open channel and closed conveyance systems should be used (see the local drainage design manual). Unless local drainage design criteria state otherwise, drainage swales should be designed as follows:

- No more than 5 acres may drain to a temporary drainage swale.
- Place drainage swales above or below, not on, a cut or fill slope.
- Swale bottom width should be at least 2 ft.
- Depth of the swale should be at least 18 in.
- Side slopes should be 2:1 or flatter.
- Drainage or swales should be laid at a grade of at least 1 %, but not more than 15 %.

- The swale must not be overtopped by the peak discharge from a 10-year storm, irrespective of the design criteria stated above.
- Remove all trees, stumps, obstructions, and other objectionable material from the swale when it is built.
- Compact any fill material along the path of the swale.
- Stabilize all swales immediately. Seed and mulch swales at a slope of less than 5 % and use rip-rap or sod for swales with a slope between 5 and 15 %. For temporary swales, geotextiles and mats (EC-7) may provide immediate stabilization.
- Irrigation may be required to establish sufficient vegetation to prevent erosion.
- Do not operate construction vehicles across a swale unless a stabilized crossing is provided.
- Permanent drainage facilities must be designed by a professional engineer (see the local drainage design criteria for proper design).
- At a minimum, the drainage swale should conform to predevelopment drainage patterns and capacities.
- Construct the drainage swale with a positive grade to a stabilized outlet.
- Provide erosion protection or energy dissipation measures if the flow out of the drainage swale can reach an erosive velocity.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment and repair linings and embankments as needed.
- Temporary conveyances should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Erosion and Sediment Control Handbook, S.J. Goldman, K. Jackson, T.A. Bursetynsky, P.E., McGraw Hill Book Company, 1986.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Metzger, M.E. 2004. Managing mosquitoes in stormwater treatment devices. University of California Division of Agriculture and Natural Resources, Publication 8125. On-line: http://anrcatalog.ucdavis.edu/pdf/8125.pdf

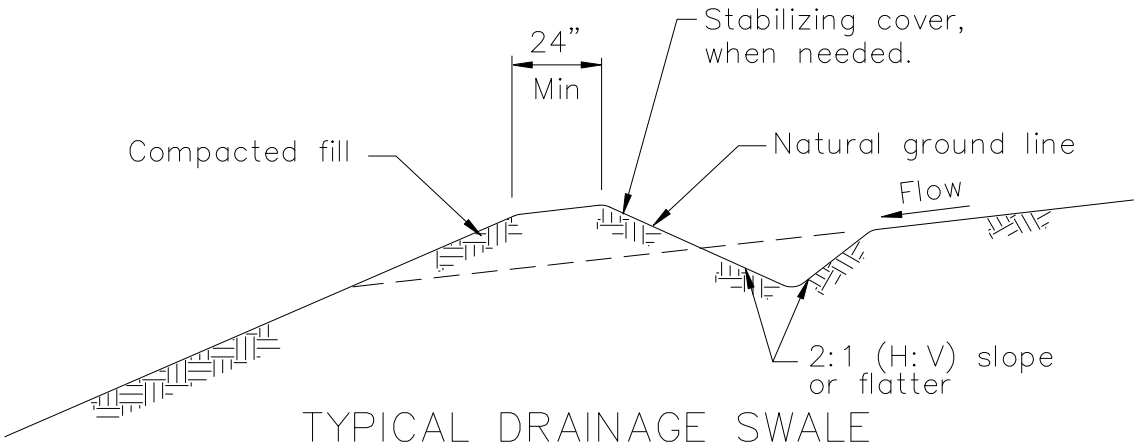
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National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Southeastern Wisconsin Regional Planning Commission (SWRPC). Costs of Urban Nonpoint Source Water Pollution Control Measures. Technical Report No. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI. 1991

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

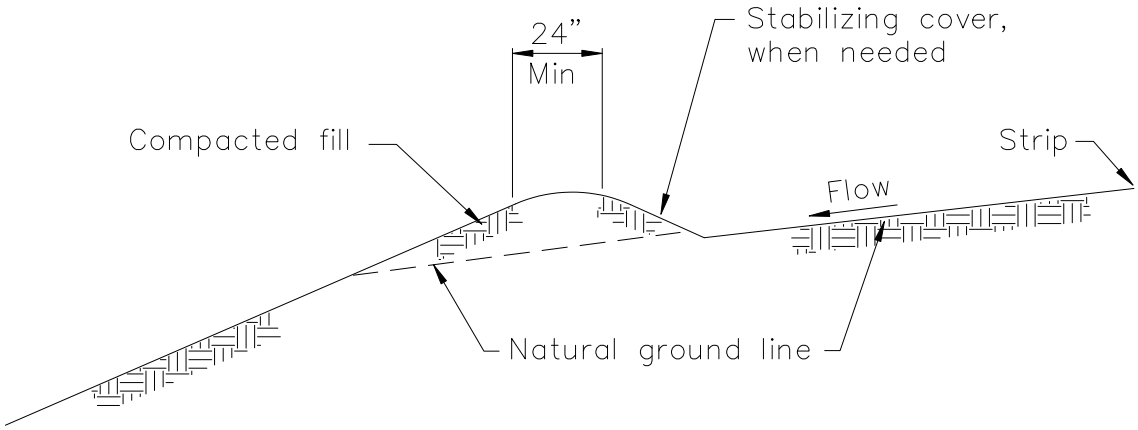
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TYPICAL DRAINAGE SWALE
NOT TO SCALE

NOTES:

1. Stabilize inlet, outlets and slopes.
2. Properly compact the subgrade.



TYPICAL EARTH DIKE
NOT TO SCALE

Compost Blanket EC-14



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch

EC-4 Hydroseeding

EC-5 Soil Binders

EC-7 Geotextiles and Mats

EC-8 Wood Mulching

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Description and Purpose

A compost blanket is applied to slopes and earth disturbed areas to prevent erosion, and in some cases, increase infiltration and/or establish vegetation. The compost blanket can be applied by hand, conveyor system, compost spreader, or pneumatic delivery (blower) system. The blanket thickness is determined from the slope steepness and anticipated precipitation. A compost blanket protects the soil surface from raindrop erosion, particularly rills and gullies that may form under other methods of erosion control.

A compost blanket, if properly installed, can be very successful at vegetation establishment, weed suppression and erosion control. The compost blanket comes into direct contact with the underlying soil, reducing rill formation. Furthermore, compost provides organic matter and nutrients important for vegetation growth. The compost blanket provides soil structure that allows water to infiltrate the soil surface and retain moisture, which also promotes seed germination and vegetation growth, in addition to reducing runoff.

Compost is typically derived from combinations of feedstocks, biosolids, leaf and yard trimmings, manure, wood, or mixed solid waste. Many types of compost are products of municipal recycle or "Green waste" programs. Compost is organic and biodegradable and can be left onsite. There are many types of compost with a variety of properties with specific functions, and accordingly, compost selection is an important design consideration in the application of this type of erosion control.

Suitable Applications

A compost blanket is appropriate for slopes and earth disturbed areas requiring protection until permanent stabilization is established. A compost blanket can also used in combination with temporary and/or permanent seeding strategies to enhance plant establishment. Examples include:

- Rough-graded areas that will remain inactive for longer than 14 days
- Soil stockpiles
- Slopes with exposed soil between existing vegetation such as trees or shrubs
- Slopes planted with live, container-grown vegetation
- Disturbed areas where plants are slow to develop

A compost blanket is typically used on slopes of 2:1 (H:V) or gentler. However, a compost blanket can be effective when applied to slopes as steep as 1:1 (H:V) with appropriate design considerations including slope length, blanket thickness, adding components such as a tackifier, or using compost blankets in conjunction with other techniques, such as compost socks and berms or fiber rolls.

Compost can be pre-seeded prior to application to the soil (recommended by the EPA for construction site stormwater runoff control) or seeded after the blanket has been installed. The compost medium can also remove pollutants in stormwater including heavy metals; oil and grease; and hydrocarbons (USEPA, 1998).

Limitations

- Compost can potentially leach nutrients (dissolved phosphorus and nitrogen) into runoff and potentially impact water quality. Compost should not be used directly upstream from nutrient impaired waterbodies (Adams et. al, 2008).
- Compost may also contain other undesirable constituents that are detrimental to water quality. Carefully consider the qualifications and experience of any compost producer/supplier.
- A compost blanket applied by hand is more time intensive and potentially costly. Using a pneumatic blower truck is the recommended cost-effective method of application.
- When blowers are used, the treatment areas should be within 300 ft of a road or surface capable of supporting trucks.
- Wind may limit application of compost and result in application to undesired locations.
- Compost blankets should not be applied in areas of concentrated flows.
- Steeper slopes may require additional blanket thickness and other stability measures such as using tackifiers or slope interruption devices (compost socks and berms, or fiber rolls). The same applies for sites with high precipitation totals or during the rainy season.

Implementation

- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Compost Materials

- California Compost Regulations (Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3) define and require a quality of compost for application. Compost should comply with all physical and chemical requirements. Specific requirements are provided in Table 1 below, taken from Caltrans Standard Special Provision 10-1 (SSP 10-1), Erosion Control (Compost Blanket).

- The compost producer should be fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate Solid Waste Facilities. If exempt from State permitting requirements, the composting facility should certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

- The compost producer should be a participant in United States Composting Council's Seal of Testing Assurance program.

- Compost moisture should be considered for composition quality and application purposes. A range of 30-50% is typical. Compost that is too dry is hard to apply and compost that is too wet is more difficult (and more expensive) to transport. For arid or semi-arid areas, or for application during the dry season, use compost with greater moisture content than areas with wetter climates. For wetter or more humid climates or for application during the wet season, drier composts can be used as the compost will absorb moisture from the ambient air.

- Organic content of the compost is also important and should range from 30 to 65% depending on site conditions.

- Compost should be high-quality mature compost. Immature compost can potentially leach nutrients.

- Compost should not be derived from mixed municipal solid waste and should be free of visible contaminants.

- Compost should not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Metal concentrations in compost should not exceed the maximum metal concentrations listed under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

- Compost should not possess objectionable odors.

- Compost should be weed free.

Table 1. Physical/Chemical Requirements of Compost
Reference - Caltrans SSP-10 Erosion Control Blanket (Compost)

Property	Test Method	Requirement
pH	*TMECC 04.11-A Elastomeric pH 1:5 Slurry Method pH Units	6.0–8.0
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0-10.0
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70+/- 5 deg C % Wet Weight Basis	30-60
Organic Matter Content	TMECC 05.07-A Loss-On-Ignition Organic Matter Method (LOI) % Dry Weight Basis	30–65
Maturity	TMECC 05.05-A Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	 80 or Above 80 or Above
Stability	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO_2-C/g OM per day	8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	100% Passing, 3 inches 90-100% Passing, 1 inch 65-100% Passing, 3/4 inch 0 - 75% Passing, 1/4 inch Maximum length 6 inches
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Plastic, Glass and Metal % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles) % > 4mm fraction	None Detected

*TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Installation

- Prior to compost application, prepare the slope by removing loose rocks, roots, stumps, and other debris greater than 2" in diameter. Prepare the slope area surface by scarifying or track walking/roughening if necessary.
- Select method to apply the compost blanket. A pneumatic blower is most cost effective and most adaptive in applying compost to steep, rough terrain, and hard to reach locations.

- A compost blanket thickness of 1" to 4" should be applied to slopes of 2:1 (H:V) or gentler, based on site-specific conditions. Increase blanket thickness with increased slope steepness and/or during installation during the rainy season (for example, 2" to 3" should be used for a 3:1 slope, while 1" to 2" can be used for a 4:1 slope). Erosion control using a compost blanket is not recommended for slopes greater than 1:1 (H:V).
- For steeper slopes, tackifiers should be utilized and/or other stabilization techniques employed. For example, compost socks or berms can be installed at intervals over the compost blanket (in a similar manner as Fiber Rolls, SE-5).
- Compost socks or berms (or equivalent linear sediment control BMP) should be placed at the top and/or bottom of the slope for additional erosion control performance.
- For optimum vegetation establishment, a blanket thickness of 1" to 2" is recommended. If vegetation establishment is not the primary function of the compost blanket, a thicker blanket may be recommended based on slope or rainfall conditions.
- Evenly distribute compost on the soil surface to the desired blanket thickness (1/2" to 4" as calculated prior based on-site conditions and objectives). Even distribution is an important factor in preventing future rill and gully erosion.
- The compost blanket should extend 3 to 6 feet over the top of the shoulder of the slope. A compost sock or compost berm can be used at the top of the slope as an auxiliary technique to prevent runoff from flowing underneath the compost blanket.
- Use additional anchoring and erosion control BMPs in conjunction of the compost blanket as needed.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Areas where erosion is evident, another layer of compost should be reapplied as soon as possible. It may be necessary to install an additional type of stormwater BMP at the top of slope or as a slope interrupter to control flow, such as a fiber roll (SE-5) or compost sock (SE-11).
- Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require reapplication of BMPs.
- Limit or prohibit foot traffic to minimize damage to BMP or impede vegetation establishment.

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An Analysis of Composting as an Environmental Remediation Technology, U.S. Environmental Protection Agency (USEPA), Solid Waste and Emergency Response (5305W), EPA530-R-8-008, 1998.

Characteristics of Compost: Moisture Holding and Water Quality Improvement, Center for Research in Water Resources, Kirchoff, C., Malina, J., and Barrett, M., 2003.

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Stormwater Best Management Practices (BMPs) Field Trials of Erosion Control Compost in Reclamation of Rock Quarry Operations, Nonpoint Source Protection Program CWA §319(h), Texas Commission on Environmental Quality, Adams, T., McFarland, A., Hauck, L., Barrett, M., and Eck, B., 2008.

Soil Preparation/Roughening EC-15



Description and Purpose

Soil Preparation/Roughening involves assessment and preparation of surface soils for BMP installation. This can include soil testing (for seed base, soil characteristics, or nutrients), as well as roughening surface soils by mechanical methods (including sheepsfoot rolling, track walking, scarifying, stair stepping, and imprinting) to prepare soil for additional BMPs, or to break up sheet flow. Soil Preparation can also involve tilling topsoil to prepare a seed bed and/or incorporation of soil amendments, to enhance vegetative establishment.

Suitable Applications

Soil preparation: Soil preparation is essential to proper vegetative establishment. In particular, soil preparation (i.e. tilling, raking, and amendment) is suitable for use in combination with any soil stabilization method, including Rolled Erosion Control Products (RECPs) or sod. Soil preparation should not be confused with roughening.

Roughening: Soil roughening is generally referred to as track walking (sometimes called imprinting) a slope, where treads from heavy equipment run parallel to the contours of the slope and act as mini terraces. Soil preparation is most effective when used in combination with erosion controls. Soil Roughening is suitable for use as a complementary process for controlling erosion on a site. Roughening is not intended to be used as a stand-alone BMP, and should be used with perimeter controls, additional erosion control measures, grade breaks, and vegetative establishment for maximum effectiveness. Roughening is intended to only affect surface soils and should not compromise slope stability or overall compaction. Suitable applications for soil roughening include:

Categories

EC	Erosion Control	☑
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch

EC-5 Soil Binders

EC-7 Geotextiles and Mats

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- Along any disturbed slopes, including temporary stockpiles, sediment basins, or compacted soil diversion berms and swales.

- Roughening should be used in combination with hydraulically applied stabilization methods, compost blanket, or straw mulch; but should not be used in combination with RECPs or sod because roughening is intended to leave terraces on the slope.

Limitations

- Preparation and roughening must take place prior to installing other erosion controls (such as hydraulically applied stabilizers) or sediment controls (such as fiber rolls) on the faces of slopes.

- In such cases where slope preparation is minimal, erosion control/revegetation BMPs that do not require extensive soil preparation - such as hydraulic mulching and seeding applications - should be employed.

- Consideration should be given to the type of erosion control BMP that follows surface preparation, as some BMPs are not designed to be installed over various types of tillage/roughening, i.e., RECPs should not be used with soil roughening due to a "bridging" effect, which suspends the blanket above the seed bed.

- Surface roughness has an effect on the amount of mulch material that needs to be applied, which shows up as a general increase in mulch material due to an increase in surface area (Topographic Index -see EC-3 Hydraulic Mulch).

Implementation

- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

General

A roughened surface can significantly reduce erosion. Based on tests done at the San Diego State Erosion Research Laboratory, various roughening techniques on slopes can result in a 12 - 76% reduction in the erosion rate versus smooth slopes.

Materials

Minimal materials are required unless amendments and/or seed are added to the soil. The majority of soil roughening/preparation can be done with equipment that is on hand at a normal construction site, such as bull dozers and compaction equipment.

Installation Guidelines

Soil Preparation

- Where appropriate or feasible, soil should be prepared to receive the seed by disking or otherwise scarifying the surface to eliminate crust, improve air and water infiltration and create a more favorable environment for germination and growth.

- Based upon soil testing conducted, apply additional soil amendments (e.g., fertilizers, additional seed) to the soil to help with germination. Follow EC-4, Hydroseeding, when selecting and applying seed and fertilizers.

Cut Slope Roughening:

- Stair-step grade or groove the cut slopes that are steeper than 3:1.
- Use stair-step grading on any erodible material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-step grading.
- Make the vertical cut distance less than the horizontal distance, and slightly slope the horizontal position of the "step" in toward the vertical wall.
- Do not make individual vertical cuts more than 2 ft. (0.6 m) high in soft materials or more than 3 ft. (0.9 m) high in rocky materials.
- Groove the slope using machinery to create a series of ridges and depressions that run across the slope, on the contour.

Fill Slope Roughening:

- Place on fill slopes with a gradient steeper than 3:1 in lifts not to exceed 8 in. (0.2 m), and make sure each lift is properly compacted.
- Ensure that the face of the slope consists of loose, uncompacted fill 4-6 in. (0.1-0.2 m) deep.
- Use grooving or tracking to roughen the face of the slopes, if necessary.
- Do not blade or scrape the final slope face.

Roughening for Slopes to be Mowed:

- Slopes that require mowing activities should not be steeper than 3:1.
- Roughen these areas to shallow grooves by track walking, scarifying, sheepsfoot rolling, or imprinting.
- Make grooves close together (less than 10 in.), and not less than 1 in. deep, and perpendicular to the direction of runoff (i.e., parallel to the slope contours).
- Excessive roughness is undesirable where mowing is planned.

Roughening with Tracked Machinery:

- Limit roughening with tracked machinery to soils with a sandy textural component to avoid undue compaction of the soil surface.
- Operate tracked machinery up and down the slope to leave horizontal depressions in the soil. Do not back-blade during the final grading operation.
- Seed and mulch roughened areas as soon as possible to obtain optimum seed germination and growth.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Check the seeded slopes for signs of erosion such as rills and gullies. Fill these areas slightly above the original grade, then reseed and mulch as soon as possible.
- Inspect BMPs weekly during normal operations, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

References and Additional Resources

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Soil Stabilization BMP Research for Erosion and Sediment Controls: Cost Survey Technical Memorandum, State of California Department of Transportation (Caltrans), July 2007.

Non-Vegetative Stabilization EC-16



Categories

EC	Erosion Control	☑
SE	Sediment Control	☒
TR	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

Non-vegetative stabilization methods are used for temporary or permanent stabilization of areas prone to erosion and should be used only where vegetative options are not feasible; examples include:

- Areas of vehicular or pedestrian traffic such as roads or paths;
- Arid environments where vegetation would not provide timely ground coverage, or would require excessive irrigation;
- Rocky substrate, infertile or droughty soils where vegetation would be difficult to establish; and
- Areas where vegetation will not grow adequately within the construction time frame.

There are several non-vegetative stabilization methods and selection should be based on site-specific conditions.

Decomposed Granite (DG) is a permanent erosion protection method that consists of a layer of stabilized decomposed granite placed over an erodible surface.

Degradable Mulches of various types (see EC-3, EC-6, EC-8) can be used for temporary non-vegetative stabilization; examples include straw mulch, compost, wood chips or hydraulic mulch.

Geotextiles and Mats can be used for temporary non-vegetative stabilization (see EC-7). These BMPs are typically manufactured from degradable or synthetic materials and are

designed and specified based on their functional longevity, i.e., how long they will persist and provide erosion protection. All geotextiles and mats should be replaced when they exceed their functional longevity or when permanent stabilization methods are instituted.

Gravel Mulch is a non-degradable erosion control product that is composed of washed and screened coarse to very coarse gravel, 16 mm to 64 mm (0.6" - 2.5"), similar to an AASHTO No. 3 coarse aggregate.

Rock Slope Protection consists of utilizing large rock or rip-rap (4"- 24") to stabilize slopes with a high erosion potential and those subject to scour along waterways.

Soil Binders can be used for temporary non-vegetative stabilization (see EC-5). The key to their use is functional longevity. In most cases, the soil binder will need to be routinely monitored and re-applied to maintain an erosion-resistant coverage.

Suitable Applications

Non-vegetated stabilization methods are suitable for use on disturbed soil areas and on material stockpiles that need to be temporarily or permanently protected from erosion by water and wind. Non-vegetated stabilization should only be utilized when vegetation cannot be established in the required timeframe, due to soil or climactic conditions, or where vegetation may be a potential fire hazard.

Decomposed Granite (DG) and Gravel Mulch are suitable for use in areas where vegetation establishment is difficult, on flat surfaces, trails and pathways, and when used in conjunction with a stabilizer or tackifier, on shallow slopes (i.e., 10:1 [H:V]). DG and gravel can also be used on shallow rocky slopes where vegetation cannot be established for permanent erosion control.

Degradable Mulches can be used to cover and protect soil surfaces from erosion both in temporary and permanent applications. In many cases, the use of mulches by themselves requires routine inspection and re-application. See EC-3 Hydraulic Mulch, EC-6 Straw Mulch, EC-8 Wood Mulch, or EC-14 Compost Blankets for more information.

Geotextiles and Mats can be used as a temporary stand-alone soil stabilization method. Depending on material selection, geotextiles and mats can be a short-term (3 mos – 1 year) or long-term (1-2 years) temporary stabilization method. For more information on geotextiles and mats see EC-7 Geotextiles and Mats.

Rock Slope Protection can be used when the slopes are subject to scour or have a high erosion potential, such as slopes adjacent to flowing waterways or slopes subject to overflow from detention facilities (spillways).

Soil Binders can be used for temporary stabilization of stockpiles and disturbed areas not subject to heavy traffic. See EC-5 Soil Binders for more information.

Limitations

General

- Refer to EC-3, EC-6, EC-8, and EC-14 for limitations on use of mulches. Refer to EC-7 for limitations on use of geotextiles and mats. Refer to EC-5 for limitations on use of Soil Binders.

Decomposed Granite

- Not available in some geographic regions.
- If not tackified, material may be susceptible to erosion even on slight slopes (e.g., 30:1 [H:V]).
- Installed costs may be more expensive than vegetative stabilization methods.

Gravel Mulch

- Availability is limited in some geographic regions.
- If not properly screened and washed, can contain fine material that can erode and/or create dust problems.
- If inadequately sized, material may be susceptible to erosion on sloped areas.
- Pore spaces fill with dirt and debris over time; may provide a growing medium for weeds.

Rock Slope Protection

- Installation is labor intensive.
- Installed costs can be significantly higher than vegetative stabilization methods.
- Rounded stones may not be used on slopes greater than 2:1 [H:V].

Implementation

General

Non-vegetated stabilization should be used in accordance with the following general guidance:

- Should be used in conjunction with other BMPs, including drainage, erosion controls and sediment controls.
- Refer to EC-3, EC-6, EC-8, and EC-14 for implementation details for mulches. Refer to EC-7 for implementation details for geotextiles and mats. Refer to EC-5 for implementation details for soil binders.
- Non-vegetated stabilization measures should be implemented as soon as the disturbance in the areas they are intended to protect has ceased.
- Additional guidance on the comparison and selection of temporary slope stabilization methods is provided in Appendix F of the Handbook.

Decomposed Granite Stabilization

- If used for a road or path should be installed on a prepared base.
- Should be mixed with a stabilizer if used for roads or pathways, or on slope applications.
- Though porous it is recommended to prevent standing water on or next to a decomposed granite road or pathway.

Gravel Mulch

- Should be sized based on slope, rainfall, and upgradient run-on conditions. Stone size should be increased as potential for erosion increases (steeper slopes, high intensity rainfall).
- If permanent, a weed control fabric should be placed prior to installation.
- Should be installed at a minimum 2" depth.
- Should completely cover all exposed surfaces.

Rock Slope Protection

- Rock slope protection installation should follow Caltrans Standard Specification 72-2: Rock Slope Protection. Refer to the specification for rock conformity requirements and installation methods.
- When using rock slope protection, rock size and installation method should be specified by an Engineer.
- A geotextile fabric should be placed prior to installation.

Inspection and Maintenance

General

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- For permanent installation, require inspection periodically and after major storm events to look for signs of erosion or damage to the stabilization.
- All damage should be repaired immediately.
- Refer to EC-3, EC-6, EC-8, and EC-14 for inspection and maintenance requirements for mulches. Refer to EC-7 for inspection and maintenance requirements for geotextiles and mats. Refer to EC-5 for inspection and maintenance requirements for soil binders.

Decomposed Granite and Gravel Mulch Stabilization

- Rake out and add decomposed granite or gravel as needed to areas subject to rill erosion. Inspect upgradient drainage controls and repair/modify as necessary.
- Should remain stable under loose surface material. Any significant problem areas should be repaired to restore uniformity to the installation.

References and Additional Resources

Arid Zone Forestry: A Guide for Field Technicians. Food and Agriculture Organization of the United Nations, 1989.

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Design of Roadside Channels with Flexible Linings, Hydraulic Engineering Circular Number 15, Third Edition, Federal Highway Administration, 2007.

Design Standards for Urban Infrastructure - Soft Landscape Design, Department of Territory and Municipal Services - Australian Capital Territory http://www.tams.act.gov.au/work/standards_and_procedures/design_standards_for_urban_infrastructure

Erosion and Sediment Control Handbook: A Guide for Protection of State Waters through the use of Best Management Practices during Land Disturbing Activities, Tennessee Department of Environment and Conservation, 2002.

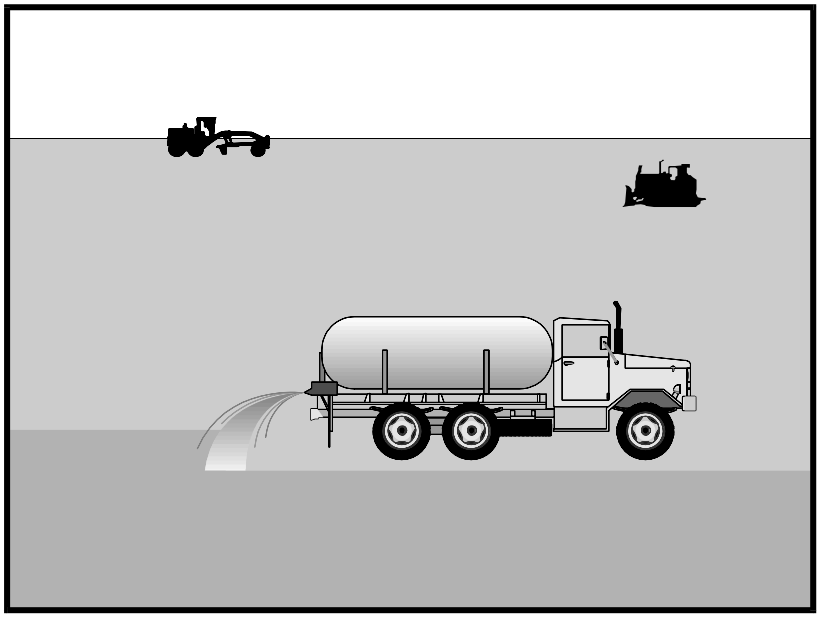
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Maine Erosion and Sediment Control BMPs, DEPLW0588, Maine Department of Environmental Protection: Bureau of Land and Water Quality, 2003.

National Menu of Best Management Practices, US Environmental Protection Agency, 2006.

Standard Specification 72-2: Rock Slope Protection. California Department of Transportation, 2006.

Wind Erosion Control WE-1



Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-5 Soil Binders

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Description and Purpose

Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

California's Mediterranean climate, with a short "wet" season and a typically long, hot "dry" season, allows the soils to thoroughly dry out. During the dry season, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking, and dust generated by construction equipment. Site conditions and climate can make dust control more of an erosion problem than water-based erosion. Additionally, many local agencies, including Air Quality Management Districts, require dust control and/or dust control permits in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. Wind erosion control is required to be implemented at all construction sites greater than 1 acre by the General Permit.

Suitable Applications

Most BMPs that provide protection against water-based erosion will also protect against wind-based erosion and dust control requirements required by other agencies will generally meet wind erosion control requirements for water quality protection. Wind erosion control BMPs are suitable during the following construction activities:

- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period (generally less than a few hours) and should be applied daily (or more often) to be effective.
- Over watering may cause erosion and track-out.
- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Chemical dust suppression agents may have potential environmental impacts. Selected chemical dust control agents should be environmentally benign.
- Effectiveness of controls depends on soil, temperature, humidity, wind velocity and traffic.
- Chemical dust suppression agents should not be used within 100 feet of wetlands or water bodies.
- Chemically treated subgrades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.
- If the soil surface has minimal natural moisture, the affected area may need to be pre-wetted so that chemical dust control agents can uniformly penetrate the soil surface.

Implementation

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table presents dust control practices that can be applied to varying site conditions that could potentially cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures include

minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph or less, and controlling the number and activity of vehicles on a site at any given time.

Chemical dust suppressants include: mulch and fiber based dust palliatives (e.g. paper mulch with gypsum binder), salts and brines (e.g. calcium chloride, magnesium chloride), non-petroleum based organics (e.g. vegetable oil, lignosulfonate), petroleum based organics (e.g. asphalt emulsion, dust oils, petroleum resins), synthetic polymers (e.g. polyvinyl acetate, vinyl, acrylic), clay additives (e.g. bentonite, montmorillonite) and electrochemical products (e.g. enzymes, ionic products).

Site Condition	Dust Control Practices							
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Temporary Gravel Construction Entrances/Equipment Wash Down	Synthetic Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	x	x	x	x	x			x
Disturbed Areas Subject to Traffic			x	x	x	x		x
Material Stockpiles		x	x	x			x	x
Demolition			x			x	x	
Clearing/ Excavation			x	x				x
Truck Traffic on Unpaved Roads			x	x	x	x	x	
Tracking					x	x		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (see EC-1, Scheduling).
- Quickly treat exposed soils using water, mulching, chemical dust suppressants, or stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Restrict construction traffic to stabilized roadways within the project site, as practicable.
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.
- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality

Control Board (RWQCB) requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."

- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and wheel wash areas.
- Stabilize inactive areas of construction sites using temporary vegetation or chemical stabilization methods.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater and should meet all applicable regulatory requirements.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Check areas protected to ensure coverage.
- Most water-based dust control measures require frequent application, often daily or even multiple times per day. Obtain vendor or independent information on longevity of chemical dust suppressants.

References and Additional Resources

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

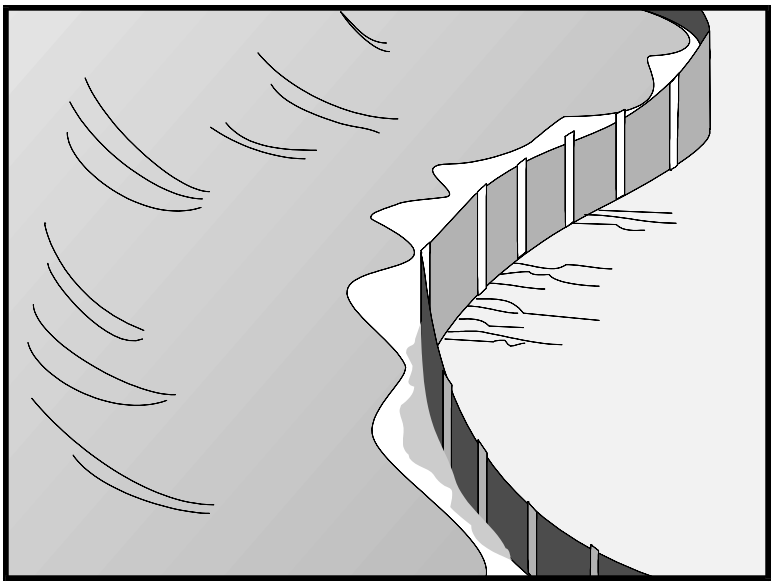
California Air Pollution Control Laws, California Air Resources Board, updated annually.

Construction Manual, Chapter 4, Section 10, "Dust Control"; Section 17, "Watering"; and Section 18, "Dust Palliative", California Department of Transportation (Caltrans), July 2001.

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Silt Fence SE-1



Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Description and Purpose

A silt fence is made of a woven geotextile that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains water, promoting sedimentation of coarse sediment behind the fence. Silt fence does not retain soil fine particles like clays or silts.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They could also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion and around inlets within disturbed areas (Storm Drain Inlet Protection, SE-10). Silt fences should not be used in locations where the flow is concentrated. Silt fences should always be used in combination with erosion controls. Suitable applications include:

- At perimeter of a project (although they should not be installed up and down slopes).
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Around inlets.
- Below other small cleared areas.

Targeted Constituents

Sediment (coarse sediment)	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm SE-12 Manufactured Linear Sediment Controls

SE-13 Compost Socks and Berms

SE-14 Biofilter Bags

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Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.
- Do not use in locations where ponded water may cause a flooding hazard.
- Do not use silt fence to divert water flows or place across any contour line.
- Improperly installed fences are subject to failure from undercutting, overtopping, or collapsing.
- Must be trenched and keyed in.
- According to the State Water Board's *CGP Review, Issue #2* (2014), silt fences reinforced with metal or plastic mesh should be avoided due to plastic pollution and wildlife concerns.
- Not intended for use as a substitute for Fiber Rolls (SE-5), when fiber rolls are being used as a slope interruption device.
- Do not use on slopes subject to creeping, slumping, or landslides.

Implementation

General

A silt fence is a temporary sediment barrier consisting of woven geotextile stretched across and attached to supporting posts, trenched-in, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap coarse sediment by intercepting and detaining sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

The following layout and installation guidance can improve performance and should be followed:

- Silt fence should be used in combination with erosion controls up-slope in order to provide the most effective sediment control.
- Silt fence alone is not effective at reducing turbidity. (Barrett and Malina, 2004)
- Designers should consider diverting sediment laden water to a temporary sediment basin or trap. (EPA, 2012)
- Use principally in areas where sheet flow occurs.
- Install along a level contour, so water does not pond more than 1.5 ft. at any point along the silt fence.
- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft.^{2} of ponding area should be provided for every acre draining to the fence.
- Efficiency of silt fences is primarily dependent on the detention time of the runoff behind the control. (Barrett and Malina, 2004)

- The drainage area above any fence should not exceed a quarter of an acre. (Rule of Thumb-100-feet of silt fence per 10,000 ft.^{2} of disturbed area.) (EPA, 2012)
- The maximum length of slope draining to any point along the silt fence should be 100 ft. per ft of silt fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.
- Silt fences should remain in place until the disturbed area draining to the silt fence is permanently stabilized, after which, the silt fence fabric and posts should be removed and properly disposed.
- J-hooks, which have ends turning up the slope to break up long runs of fence and provide multiple storage areas that work like mini-retention areas, may be used to increase the effectiveness of silt fence.
- Be aware of local regulations regarding the type and installation requirements of silt fence, which may differ from those presented in this fact sheet.

Design and Layout

In areas where high winds are anticipated the fence should be supported by a plastic or wire mesh. The geotextile fabric of the silt fence should contain ultraviolet inhibitors and stabilizers to provide longevity equivalent to the project life or replacement schedule.

- Layout in accordance with the attached figures.
- For slopes that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to protect silt fence from rocks (e.g., rockfall netting) ensure the integrity of the silt fence installation.

Standard vs. Heavy Duty Silt Fence

Standard Silt Fence

- Generally applicable in cases where the area draining to fence produces moderate sediment loads.

Heavy Duty Silt Fence

- Heavy duty silt fence usually has 1 or more of the following characteristics, not possessed by standard silt fence.
  - Fabric is reinforced with wire backing or additional support.
  - Posts are spaced closer than pre-manufactured, standard silt fence products.
- Use is generally limited to areas affected by high winds.
- Area draining to fence produces moderate sediment loads.

Materials

Standard Silt Fence

- Silt fence material should be woven geotextile with a minimum width of 36 in. The fabric should conform to the requirements in ASTM designation D6461.

- Wooden stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.

- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15-gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

Heavy-Duty Silt Fence

- Some silt fence has a wire backing to provide additional support, and there are products that may use prefabricated plastic holders for the silt fence and use metal posts instead of wood stakes.

Installation Guidelines – Traditional Method

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line of the proposed silt fence (trenches should not be excavated wider or deeper than necessary for proper silt fence installation).

- Bottom of the silt fence should be keyed-in a minimum of 12 in.

- Posts should be spaced a maximum of 6 ft. apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.

- When standard strength geotextile is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy–duty wire staples at least 1 in. long. The mesh should extend into the trench.

- When extra-strength geotextile and closer post spacing are used, the mesh support fence may be eliminated.

- Woven geotextile should be purchased in a long roll, then cut to the length of the barrier. When joints are necessary, geotextile should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.

- The trench should be backfilled with native material and compacted.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case should the reach exceed 500 ft.

- Cross barriers should be a minimum of 1/3 and a maximum of ½ the height of the linear barrier.

- See typical installation details at the end of this fact sheet.

Installation Guidelines - Static Slicing Method

- Static Slicing is defined as insertion of a narrow blade pulled behind a tractor, similar to a plow blade, at least 10 in. into the soil while at the same time pulling silt geotextile fabric into the ground through the opening created by the blade to the depth of the blade. Once the geotextile is installed, the soil is compacted using tractor tires.
- This method will not work with pre-fabricated, wire backed silt fence.
- Benefits:
    - Ease of installation (most often done with a 2-person crew).
    - Minimal soil disturbance.
    - Better level of compaction along fence, less susceptible to undercutting
    - Uniform installation.
- Limitations:
    - Does not work in shallow or rocky soils.
    - Complete removal of geotextile material after use is difficult.
    - Be cautious when digging near potential underground utilities.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches 1/3 of the barrier height.
- Silt fences should be left in place until the upgradient area is permanently stabilized. Until then, the silt fence should be inspected and maintained regularly.
- Remove silt fence when upgradient areas are stabilized. Fill and compact post holes and anchor trench, remove sediment accumulation, grade fence alignment to blend with adjacent ground, and stabilize disturbed area.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

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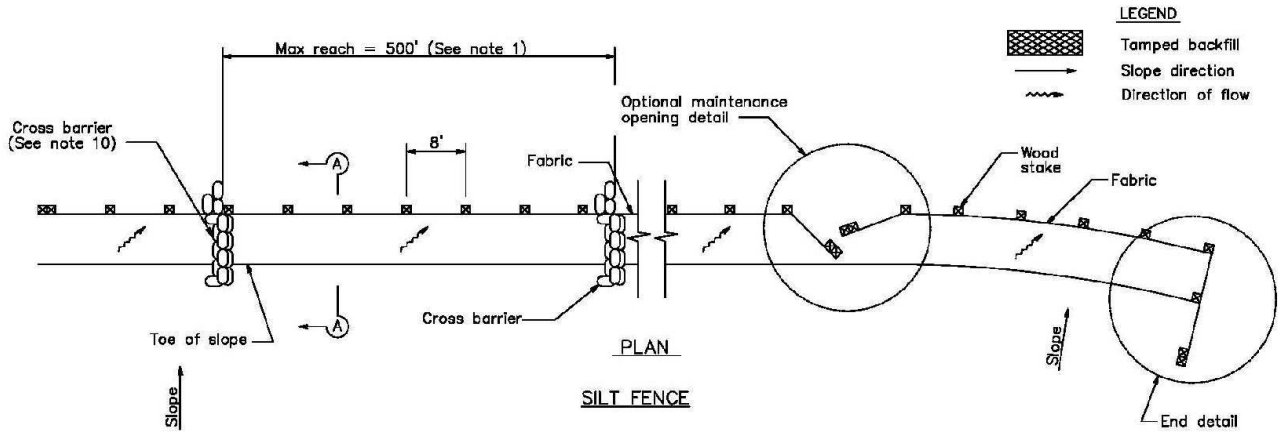
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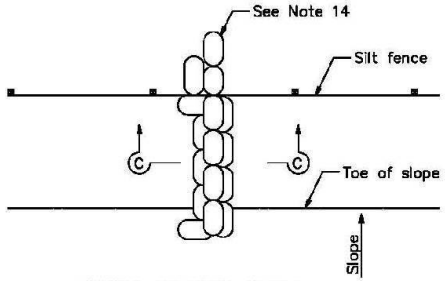
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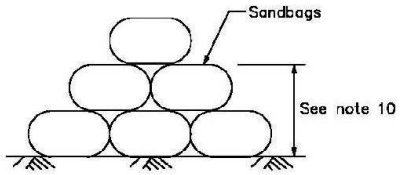


NOTES

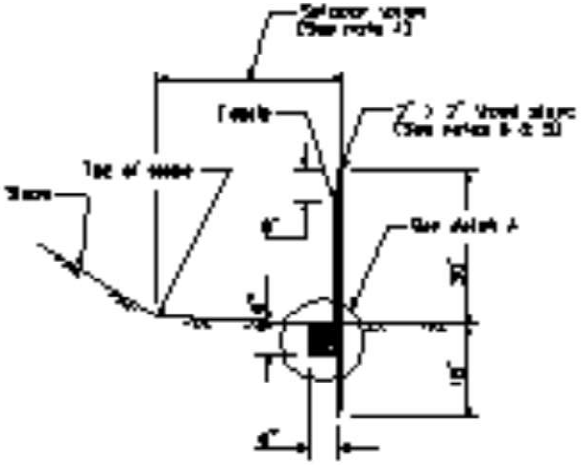
1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier, in no case shall the reach length exceed 500'.
2. The last 8'–0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'–0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow–through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.
14. Add 3–4 bags to cross barrier on downgradient side of silt fence as needed to prevent bypass or undermining and as allowable based on site limits of disturbance.



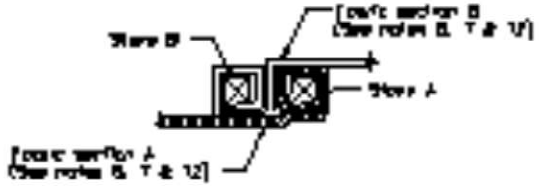
CROSS BARRIER DETAIL



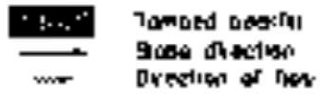
SECTION C–C



SECTION A-A

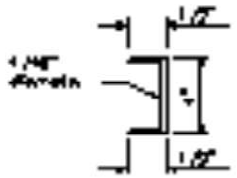


JOINING SECTION DETAIL (TOP VIEW)

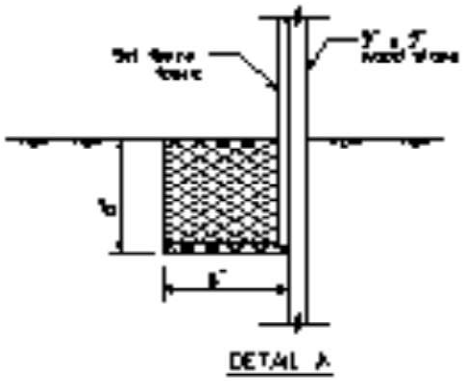




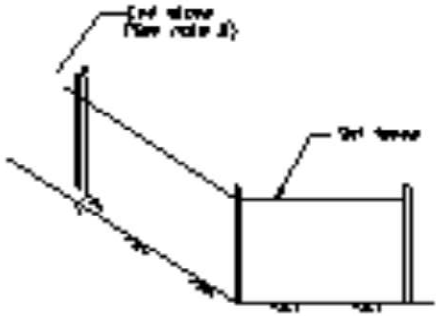
END STAKE DETAIL (TOP VIEW)



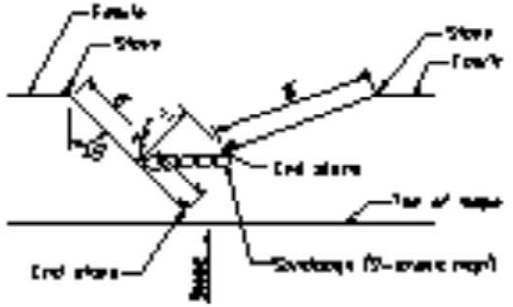
STAPLE DETAIL
(SEE NOTE 9)



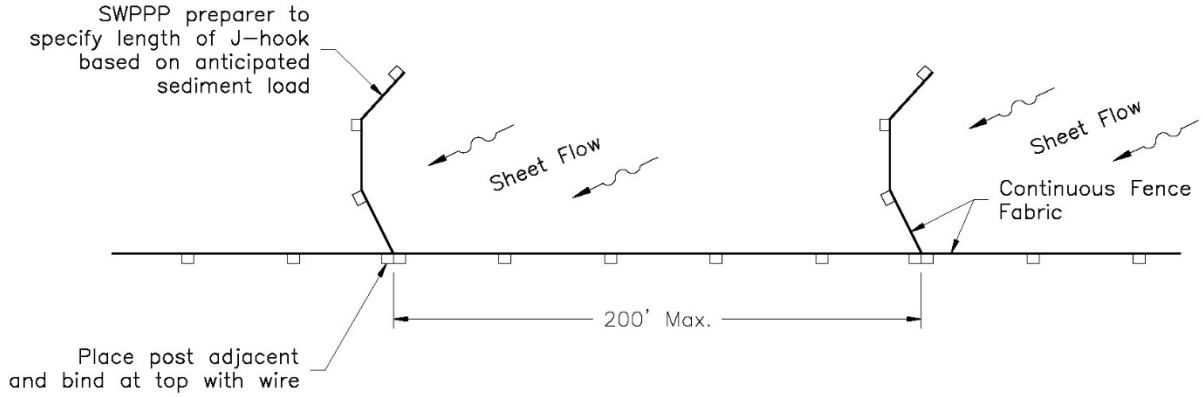
DETAIL A



END DETAIL

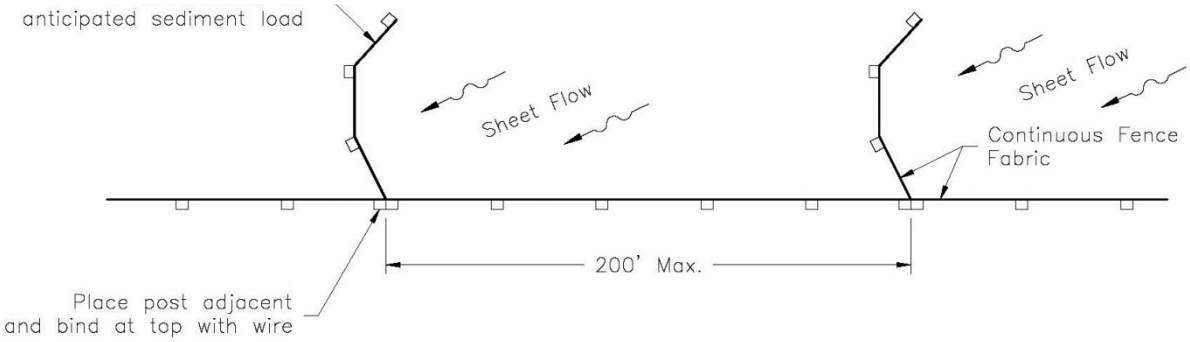


OPTIONAL MAINTENANCE OPENING DETAIL
(SEE NOTE 11)



Plan

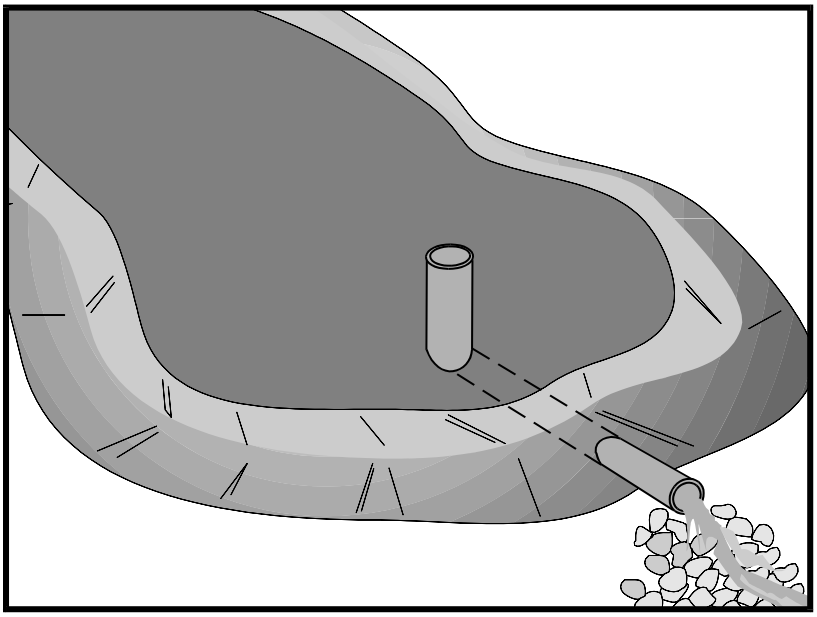
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Plan

J–HOOK

Sediment Basin SE-2



Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-3 Sediment Trap (for smaller areas)

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Description and Purpose

A sediment basin is a temporary basin formed by excavation or by constructing an embankment so that sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is released.

Sediment basin design guidance presented in this fact sheet is intended to provide options, methods, and techniques to optimize temporary sediment basin performance and basin sediment removal. Basin design guidance provided in this fact sheet is not intended to guarantee basin effluent compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance. Therefore, optimally designed and maintained sediment basins should be used in conjunction with a comprehensive system of BMPs that includes:

- Diverting runoff from undisturbed areas away from the basin
- Erosion control practices to minimize disturbed areas on-site and to provide temporary stabilization and interim sediment controls (e.g., stockpile perimeter control, check dams, perimeter controls around individual lots) to reduce the basin's influent sediment concentration.

At some sites, sediment basin design enhancements may be required to adequately remove sediment. Traditional

(a.k.a. “physical”) enhancements such as alternative outlet configurations or flow deflection baffles increase detention time and other techniques such as outlet skimmers preferentially drain flows with lower sediment concentrations. These “physical” enhancement techniques are described in this fact sheet. To further enhance sediment removal particularly at sites with fine soils or turbidity sensitive receiving waters, some projects may need to consider implementing Active Treatment Systems (ATS) whereby coagulants and flocculants are used to enhance settling and removal of suspended sediments. Guidance on implementing ATS is provided in SE-11.

Suitable Applications

Sediment basins may be suitable for use on larger projects with sufficient space for constructing the basin. Sediment basins should be considered for use:

- Where sediment-laden water may enter the drainage system or watercourses
- On construction projects with disturbed areas during the rainy season
- At the outlet of disturbed watersheds between 5 acres and 75 acres and evaluated on a site by site basis
- Where post construction detention basins are required
- In association with dikes, temporary channels, and pipes used to convey runoff from disturbed areas

Limitations

Sediment basins must be installed only within the property limits and where failure of the structure will not result in loss of life, damage to homes or buildings, or interruption of use or service of public roads or utilities. In addition, sediment basins are attractive to children and can be very dangerous. Local ordinances regarding health and safety must be adhered to. If fencing of the basin is required, the type of fence and its location should be shown in the SWPPP and in the construction specifications.

- As a general guideline, sediment basins are suitable for drainage areas of 5 acres or more, but not appropriate for drainage areas greater than 75 acres. However, the tributary area should be evaluated on a site by site basis.
- Sediment basins may become an “attractive nuisance” and care must be taken to adhere to all safety practices. If safety is a concern, basin may require protective fencing.
- Sediment basins designed according to this fact sheet are only effective in removing sediment down to about the silt size fraction. Sediment-laden runoff with smaller size fractions (fine silt and clay) may not be adequately treated unless chemical (or other appropriate method) treatment is used in addition to the sediment basin.
- Basins with a height of 25 ft or more or an impounding capacity of 50 ac-ft or more must obtain approval from California Department of Water Resources Division of Safety of Dams (http://www.water.ca.gov/damsafety/).

- Water that stands in sediment basins longer than 96 hours may become a source of mosquitoes (and midges), particularly along perimeter edges, in shallow zones, in scour or below-grade pools, around inlet pipes, along low-flow channels, and among protected habitats created by emergent or floating vegetation (e.g. cattails, water hyacinth), algal mats, riprap, etc.
- Basins require large surface areas to permit settling of sediment. Size may be limited by the available area.

Implementation

General

A sediment basin is a controlled stormwater release structure formed by excavation or by construction of an embankment of compacted soil across a drainage way, or other suitable location. It is intended to trap sediment before it leaves the construction site. The basin is a temporary measure expected to be used during active construction in most cases and is to be maintained until the site area is permanently protected against erosion or a permanent detention basin is constructed.

Sediment basins are suitable for nearly all types of construction projects. Whenever possible, construct the sediment basins before clearing and grading work begins. Basins should be located at the stormwater outlet from the site but not in any natural or undisturbed stream. A typical application would include temporary dikes, pipes, and/or channels to convey runoff to the basin inlet.

Many development projects in California are required by local ordinances to provide a stormwater detention basin for post-construction flood control, desilting, or stormwater pollution control. A temporary sediment basin may be constructed by rough grading the post-construction control basins early in the project.

Sediment basins if properly designed and maintained can trap a significant amount of the sediment that flows into them. However, traditional basins do not remove all inflowing sediment. Therefore, they should be used in conjunction with erosion control practices such as temporary seeding, mulching, diversion dikes, etc., to reduce the amount of sediment flowing into the basin.

Planning

To improve the effectiveness of the basin, it should be located to intercept runoff from the largest possible amount of disturbed area. Locations best suited for a sediment basin are generally in lower elevation areas of the site (or basin tributary area) where site drainage would not require significant diversion or other means to direct water to the basin but outside jurisdictional waterways. However, as necessary, drainage into the basin can be improved by the use of earth dikes and drainage swales (see BMP EC-9). . The basin should not be located where its failure would result in the loss of life or interruption of the use or service of public utilities or roads.

Construct before clearing and grading work begins when feasible.

- Do not locate the basin in a jurisdictional stream.

- Basin sites should be located where failure of the structure will not cause loss of life, damage to homes or buildings, or interruption of use or service of public roads or utilities.
- Basins with a height of 25 ft or more or an impounding capacity of 50 ac-ft must obtain approval from the Division of Dam Safety. Local dam safety requirements may be more stringent.
- Limit the contributing area to the sediment basin to only the runoff from the disturbed soil areas. Use temporary concentrated flow conveyance controls to divert runoff from undisturbed areas away from the sediment basin.
- The basin should be located: (1) by excavating a suitable area or where a low embankment can be constructed across a swale, (2) where post-construction (permanent) detention basins will be constructed, and (3) where the basins can be maintained on a year-round basis to provide access for maintenance, including sediment removal and sediment stockpiling in a protected area, and to maintain the basin to provide the required capacity.

Design

When designing a sediment basin, designers should evaluate the site constraints that could affect the efficiency of the BMP. Some of these constraints include: the relationship between basin capacity, anticipated sediment load, and freeboard, available footprint for the basin, maintenance frequency and access, and hydraulic capacity and efficiency of the temporary outlet infrastructure. Sediment basins should be designed to maximize sediment removal and to consider sediment load retained by the basin as it affects basin performance.

Three Basin Design Options (Part A) are presented below along with a Typical Sediment/Detention Basin Design Methodology (Part B). Regardless of the design option that is selected, designers also need to evaluate the sediment basin capacity with respect to sediment accumulation (See "*Step 3. Evaluate the Capacity of the Sediment Basin") and* should incorporate approaches identified in "*Step 4. Other Design Considerations*" to enhance basin performance.

A) Basin Design Options:

Option 1:

Design sediment basin(s) using the standard equation:

$$A_s = \frac{1.2Q}{V_s} \qquad \text{(Eq. 1)}$$

Where:

A_s = Minimum surface area for trapping soil particles of a certain size

V_s = Settling velocity of the design particle size chosen (V_s = 0.00028 ft/s for a design particle size of 0.01 mm at 68°F)

1.2 = Factor of safety recommended by EPA to account for the reduction in basin efficiency caused due to turbulence and other non ideal conditions.

$Q = CIA$ (Eq.2)

Where

Q = Peak basin influent flow rate measured in cubic feet per second (ft^3/s)

C = Runoff coefficient (unitless)

I = Peak rainfall intensity for the 10-year, 6-hour rain event (in/hr)

A = Area draining into the sediment basin in acres

The design particle size should be the smallest soil grain size determined by wet sieve analysis, or the fine silt sized (0.01 mm [or 0.0004 in.]) particle, and the Vs used should be 100 percent of the calculated settling velocity.

This sizing basin method is dependent on the outlet structure design or the total basin length with an appropriate outlet. If the designer chooses to utilize the outlet structure to control the flow duration in the basin, the basin length (distance between the inlet and the outlet) should be a minimum of twice the basin width; the depth should not be less than 3 ft nor greater than 5 ft for safety reasons and for maximum efficiency (2 ft of sediment storage, 2 ft of capacity). If the designer chooses to utilize the basin length (with appropriate basin outlet) to control the flow duration in the basin, the basin length (distance between the inlet and the outlet) should be a specifically designed to capture 100% of the design particle size; the depth should not be less than 3 ft nor greater than 5 ft for safety reasons and for maximum efficiency (2 ft of sediment storage, 2 ft of capacity).

Basin design guidance provided herein assumes standard water properties (e.g., estimated average water temperature, kinematic viscosity, etc.) as a basis of the design. Designers can use an alternative design (Option 3) with site specific water properties as long as the design is as protective as Option 1.

The design guidance uses the peak influent flow rate to size sediment basins. Designers can use an alternative design (Option 3) with site specific average flow rates as long as the design is as protective as Option 1.

The basin should be located on the site where it can be maintained on a year-round basis and should be maintained on a schedule to retain the 2 ft of capacity.

Option 2:

Design pursuant to local ordinance for sediment basin design and maintenance, provided that the design efficiency is as protective or more protective of water quality than Option 1.

Option 3:

The use of an equivalent surface area design or equation provided that the design efficiency is as protective or more protective of water quality than Option 1.

B) Typical Sediment/Detention Basin Design Methodology:

Design of a sediment basin requires the designer to have an understanding of the site constraints, knowledge of the local soil (e.g., particle size distribution of potentially contributing soils), drainage area of the basin, and local hydrology. Designers should not assume that a sediment basin for location A is applicable to location B. Therefore, designers can use this factsheet as guidance but will need to apply professional judgment and knowledge of the site to design an effective and efficient sediment basin. The following provides a general overview of typical design methodologies:

Step 1. Hydrologic Design

- Evaluate the site constraints and assess the drainage area for the sediment basin. Designers should consider on- and off-site flows as well as changes in the drainage area associated with site construction/disturbance. To minimize additional construction during the course of the project, the designer should consider identifying the maximum drainage area when calculating the basin dimensions.

- If a local hydrology manual is not available, it is recommended to follow standard rational method procedures to estimate the flow rate. The references section of this factsheet provides a reference to standard hydrology textbooks that can provide standard methodologies. If local rainfall depths are not available, values can be obtained from standard precipitation frequency maps from NOAA (downloaded from http://www.wrcc.dri.edu/pcpnfreq.html).

Step 2. Hydraulic Design

- Calculate the surface area required for the sediment basin using Equation 1. In which the flow rate is estimated for a 10-yr 6-hr event using rational method procedure listed in local hydrology manual and Vs is estimated using Stokes Law presented in Equation 3.

$$V_s = 2.81d^2 \qquad \text{(Eq.3)}$$

Where

V_s = Settling velocity in feet per second at 68˚F

d = diameter of sediment particle in millimeters (smallest soil grain size determined by wet sieve analysis or fine silt (0.01 mm [or 0.0004 in.])

- In general, the basin outlet design requires an iterative trial and error approach that considered the maximum water surface elevation, the elevation versus volume (stage-storage) relationship, the elevation verses basin outflow (a.k.a.-discharge) relationship, and the estimated inflow hydrograph. To adequately design the basins to settle sediment, the outlet configuration and associated outflow rates can be estimated by numerous methodologies. The following provides some guidance for design the basin outlet:

  - An outlet should have more than one orifice.

  - An outlet design typically utilizes multiple horizontal rows of orifices (approximately 3 or more) with at least 2 orifices per row (see Figures 1 and 2 at the end of this fact sheet).

- Orifices can vary in shape.
- Select the appropriate orifice diameter and number of perforations per row with the objective of minimizing the number of rows while maximizing the detention time.
- The diameter of each orifice is typically a maximum of 3-4 inches and a minimum of 0.25-0.5 inches.
- If a rectangular orifice is used, it is recommended to have minimum height of 0.5 inches and a maximum height of 6 inches.
- Rows are typically spaced at three times the diameter center to center vertically with a minimum distance of approximately 4 inches on center and a maximum distance of 1 foot on center.
- To estimate the outflow rate, each row is calculated separately based on the flow through a single orifice then multiplied by the number of orifices in the row. This step is repeated for each of the rows. Once all of the orifices are estimated, the total outflow rate versus elevation (stage-discharge curve) is developed to evaluate the detention time within the basin.
- Flow through a single orifice can be estimated using an Equation 4:

$$Q = BC' A(2gH)^{0.5} \qquad \text{(Eq.4)}$$

Where
Q = Outflow rate in ft^3/s
C′ = Orifice coefficient (unitless)
A = Area of the orifice (ft^2)
g = acceleration due to gravity (ft^3/s)
H = Head above the orifice (ft)
B = Anticipated Blockage or clogging factor (unitless), It is dependent on anticipated sediment and debris load, trash rack configuration etc, so the value is dependent on design engineer's professional judgment and/or local requirements (B is never greater than 1 and a value of 0.5 is generally used)

  - Care must be taken in the selection of orifice coefficient ("C′"); 0.60 is most often recommended and used. However, based on actual tests, Young and Graziano (1989), "Outlet Hydraulics of Extended Detention Facilities for Northern Virginia Planning District Commission", recommends the following:
    - C′ = 0.66 for thin materials; where the thickness is equal to or less than the orifice diameter, or
    - C′ = 0.80 when the material is thicker than the orifice diameter
- If different sizes of orifices are used along the riser then they have to be sized such that not more than 50 percent of the design storm event drains in one-third of the drawdown time (to provide adequate settling time for events smaller than the design storm event)

and the entire volume drains within 96 hours or as regulated by the local vector control agency. If a basin fails to drain within 96 hours, the basin must be pumped dry.

- Because basins are not maintained for infiltration, water loss by infiltration should be disregarded when designing the hydraulic capacity of the outlet structure.

- Floating Outlet Skimmer: The floating skimmer (see Figure 3 at the end of this fact sheet is an alternative outlet configuration (patented) that drains water from upper portion of the water column. This configuration has been used for temporary and permanent basins and can improve basin performance by eliminating bottom orifices which have the potential of discharging solids. Some design considerations for this alternative outlet device includes the addition of a sand filter or perforated under drain at the low point in the basin and near the floating skimmer. These secondary drains allow the basin to fully drain. More detailed guidelines for sizing the skimmer can be downloaded from http://www.fairclothskimmer.com/.

- Hold and Release Valve: An ideal sediment/detention basin would hold all flows to the design storm level for sufficient time to settle solids, and then slowly release the storm water. Implementing a reliable valve system for releasing detention basins is critical to eliminate the potential for flooding in such a system. Some variations of hold and release valves include manual valves, bladder devices or electrically operated valves. When a precipitation event is forecast, the valve would be close for the duration of the storm and appropriate settling time. When the settling duration is met (approximately 24 or 48 hours), the valve would be opened and allow the stormwater to be released at a rate that does not resuspend settled solids and in a non-erosive manner. If this type of system is used the valve should be designed to empty the entire basin within 96 hours or as stipulated by local vector control regulations.

Step 3. Evaluate the Capacity of the Sediment Basin

- Typically, sediment basins do not perform as designed when they are not properly maintained or the sediment yield to the basin is larger than expected. As part of a good sediment basin design, designers should consider maintenance cycles, estimated soil loss and/or sediment yield, and basin sediment storage volume. The two equations below can be used to quantify the amount of soil entering the basin.

- The Revised Universal Soil Loss Equation (RUSLE, Eq.5) can be used to estimate annual soil loss and the Modified Universal Soil Equation (MUSLE, Eq.6) can be used to estimate sediment yield from a single storm event.

$$A = R \times K \times LS \times C \times P \qquad \text{(Eq.5)}$$

$$Y = 95\left(Q \times q_p\right)^{0.56} \times K \times LS \times C \times P \qquad \text{(Eq.6)}$$

Where:

A = annual soil loss, tons/acre-year

R = rainfall erosion index, in 100 ft. Tons/acre.in/hr.

K = soil erodibility factor, tons/acre per unit of R

LS = slope length and steepness factor (unitless)

C = vegetative cover factor (unitless)

P = erosion control practice factor (unitless)

Y = single storm sediment yield in tons

Q = runoff volume in acre-feet

q_p = peak flow in cfs

- Detailed descriptions and methodologies for estimating the soil loss can be obtained from standard hydrology text books (See References section).
- Determination of the appropriate equation should consider construction duration and local environmental factors (soils, hydrology, etc.). For example, if a basin is planned for a project duration of 1 year and the designer specifies one maintenance cycle, RUSLE could be used to estimate the soil loss and thereby the designer could indicate that the sediment storage volume would be half of the soil loss value estimated. As an example, for use of MUSLE, a project may have a short construction duration thereby requiring fewer maintenance cycles and a reduced sediment storage volume. MUSLE would be used to estimate the anticipated soil loss based on a specific storm event to evaluate the sediment storage volume and appropriate maintenance frequency.
- The soil loss estimates are an essential step in the design, and it is essential that the designer provide construction contractors with enough information to understand maintenance frequency and/or depths within the basin that would trigger maintenance. Providing maintenance methods, frequency and specification should be included in design bid documents such as the SWPPP Site Map.
- Once the designer has quantified the amount of soil entering the basin, the depth required for sediment storage can be determined by dividing the estimated sediment loss by the surface area of the basin.

Step 4. Other Design Considerations

- Consider designing the volume of the settling zone for the total storm volume associated with the 2-year event or other appropriate design storms specified by the local agency. This volume can be used as a guide for sizing the basin without iterative routing calculations. The depth of the settling zone can be estimated by dividing the estimated 2-yr storm volume by the surface area of the basin.
- The basin volume consists of two zones:
  - A sediment storage zone at least 1 ft deep.
  - A settling zone at least 2 ft deep.
  - The basin depth must be no less than 3 ft (not including freeboard).

- Proper hydraulic design of the outlet is critical to achieving the desired performance of the basin. The outlet should be designed to drain the basin within 24 to 96 hours (also referred to as "drawdown time"). The 24-hour limit is specified to provide adequate settling time; the 96-hour limit is specified to mitigate vector control concerns.

- Confirmation of the basin performance can be evaluated by routing the design storm (10-yr 6-hr, or as directed by local regulations) through the basin based on the basin volume (stage-storage curve) and the outlet design (stage-discharge curve based on the orifice configuration or equivalent outlet design).

- Sediment basins, regardless of size and storage volume, should include features to accommodate overflow or bypass flows that exceed the design storm event.

    - Include an emergency spillway to accommodate flows not carried by the principal spillway. The spillway should consist of an open channel (earthen or vegetated) over undisturbed material (not fill) or constructed of a non-erodible riprap (or equivalent protection) on fill slopes.

    - The spillway control section, which is a level portion of the spillway channel at the highest elevation in the channel, should be a minimum of 20 ft in length.

- Rock, vegetation or appropriate erosion control should be used to protect the basin inlet, outlet, and slopes against erosion.

- The total depth of the sediment basin should include the depth required for sediment storage, depth required for settling zone and freeboard of at least 1 foot or as regulated by local flood control agency for a flood event specified by the local agency.

- The basin alignment should be designed such that the length of the basin is more than twice the width of the basin; the length should be determined by measuring the distance between the inlet and the outlet. If the site topography does not allow for this configuration baffles should be installed so that the ratio is satisfied. If a basin has more than one inflow point, any inflow point that conveys more than 30 percent of the total peak inflow rate has to meet the required length to width ratio.

- An alternative basin sizing method proposed by Fifield (2004) can be consulted to estimate an alternative length to width ratio and basin configuration. These methods can be considered as part of Option 3 which allows for alternative designs that are protective or more protective of water quality.

- Baffles (see Figure 4 at the end of this fact sheet) can be considered at project sites where the existing topography or site constraints limit the length to width ratio. Baffles should be constructed of earthen berms or other structural material within the basin to divert flow in the basin, thus increasing the effective flow length from the basin inlet to the outlet riser. Baffles also reduce the change of short circuiting and allows for settling throughout the basin.

- Baffles are typically constructed from the invert of the basin to the crest of the emergency spillway (i.e., design event flows are meant to flow around the baffles and flows greater than the design event would flow over the baffles to the emergency spillway).

- Use of other materials for construction of basin baffles (such as silt fence) may not be appropriate based on the material specifications and will require frequent maintenance (maintain after every storm event). Maintenance may not be feasible when required due to flooded conditions resulting from frequent (i.e., back to back) storm events. Use of alternative baffle materials should not deviate from the intended purpose of the material, as described by the manufacturer.
- Sediment basins are best used in conjunction with erosion controls.
- Basins with an impounding levee greater than 4.5 ft tall, measured from the lowest point to the impounding area to the highest point of the levee, and basins capable of impounding more than 35,000 ft^3, should be designed by a Registered Civil Engineer. The design should include maintenance requirements, including sediment and vegetation removal, to ensure continuous function of the basin outlet and bypass structures.
- A forebay, constructed upstream of the basin, may be provided to remove debris and larger particles.
- The outflow from the sediment basin should be provided with velocity dissipation devices (see BMP EC-10) to prevent erosion and scouring of the embankment and channel.
- The principal outlet should consist of a corrugated metal, high density polyethylene (HDPE), or reinforced concrete riser pipe with dewatering holes and an anti-vortex device and trash rack attached to the top of the riser, to prevent floating debris from flowing out of the basin or obstructing the system. This principal structure should be designed to accommodate the inflow design storm.
- A rock pile or rock-filled gabions can serve as alternatives to the debris screen, although the designer should be aware of the potential for extra maintenance involved should the pore spaces in the rock pile clog.
- The outlet structure should be placed on a firm, smooth foundation with the base securely anchored with concrete or other means to prevent floatation.
- Attach riser pipe (watertight connection) to a horizontal pipe (barrel). Provide anti-seep collars on the barrel.
- Cleanout level should be clearly marked on the riser pipe.

Installation

- Securely anchor and install an anti-seep collar on the outlet pipe/riser and provide an emergency spillway for passing major floods (see local flood control agency).
- Areas under embankments must be cleared and stripped of vegetation.
- Chain link fencing should be provided around each sediment basin to prevent unauthorized entry to the basin or if safety is a concern.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level and as required by local requirements. It is recommended that at a minimum, basins be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Examine basin banks for seepage and structural soundness.
- Check inlet and outlet structures and spillway for any damage or obstructions. Repair damage and remove obstructions as needed.
- Check inlet and outlet area for erosion and stabilize if required.
- Check fencing for damage and repair as needed.
- Sediment that accumulates in the basin must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage volume. Sediment removed during maintenance should be managed properly. The sediment should be appropriately evaluated and used or disposed of accordingly. Options include: incorporating sediment into earthwork on the site (only if there is no risk that sediment is contaminated); or off-site export/disposal at an appropriate location (e.g., sediment characterization and disposal to an appropriate landfill).
- Remove standing water from basin within 96 hours after accumulation.
- If the basin does not drain adequately (e.g., due to storms that are more frequent or larger than the design storm or other unforeseen site conditions), dewatering should be conducted in accordance with appropriate dewatering BMPs (see NS-2) and in accordance with local permits as applicable.
- To minimize vector production:
    - Remove accumulation of live and dead floating vegetation in basins during every inspection.
    - Remove excessive emergent and perimeter vegetation as needed or as advised by local or state vector control agencies.

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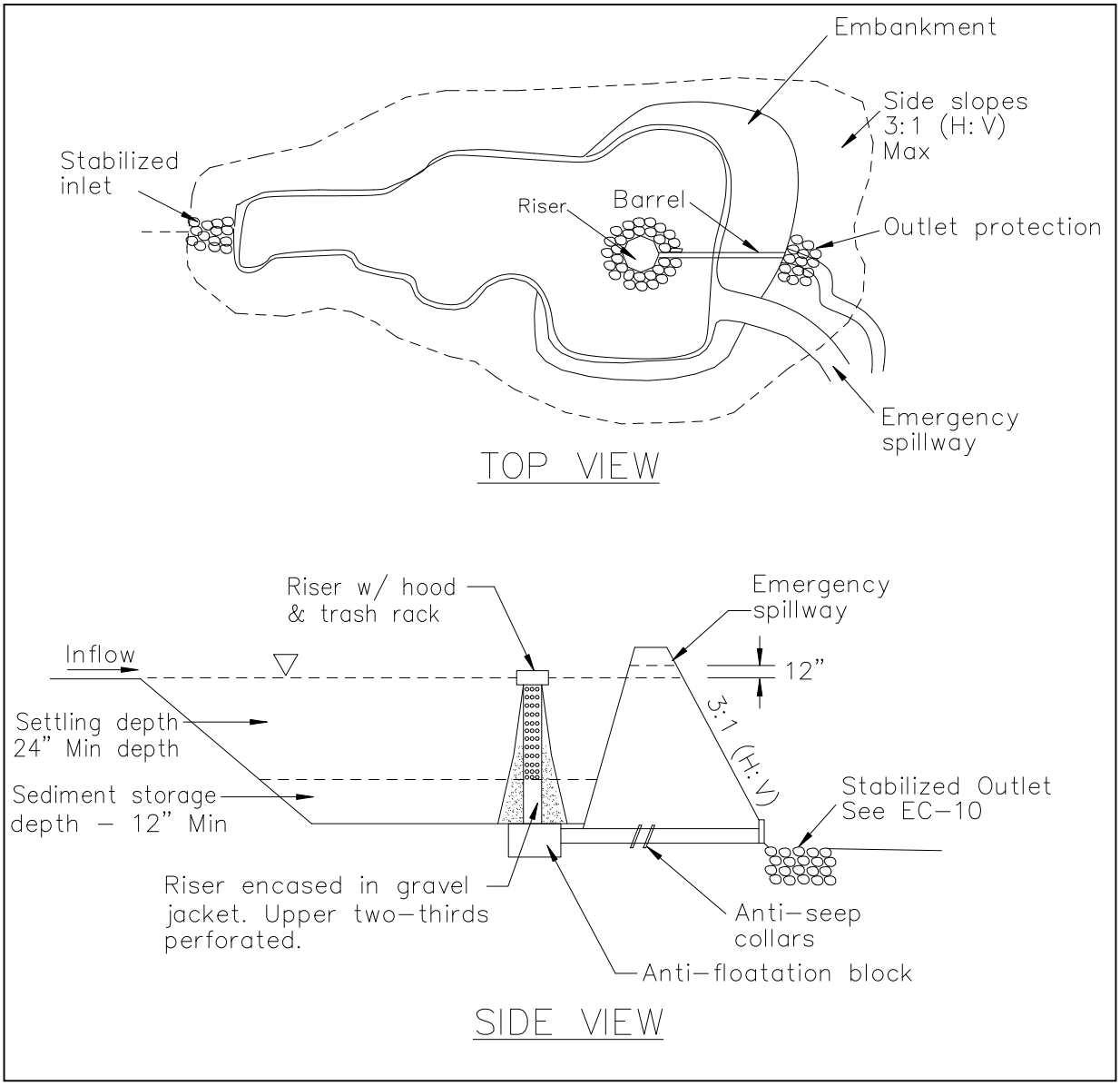


FIGURE 1: TYPICAL TEMPORARY SEDIMENT BASIN
MULTIPLE ORIFICE DESIGN
NOT TO SCALE

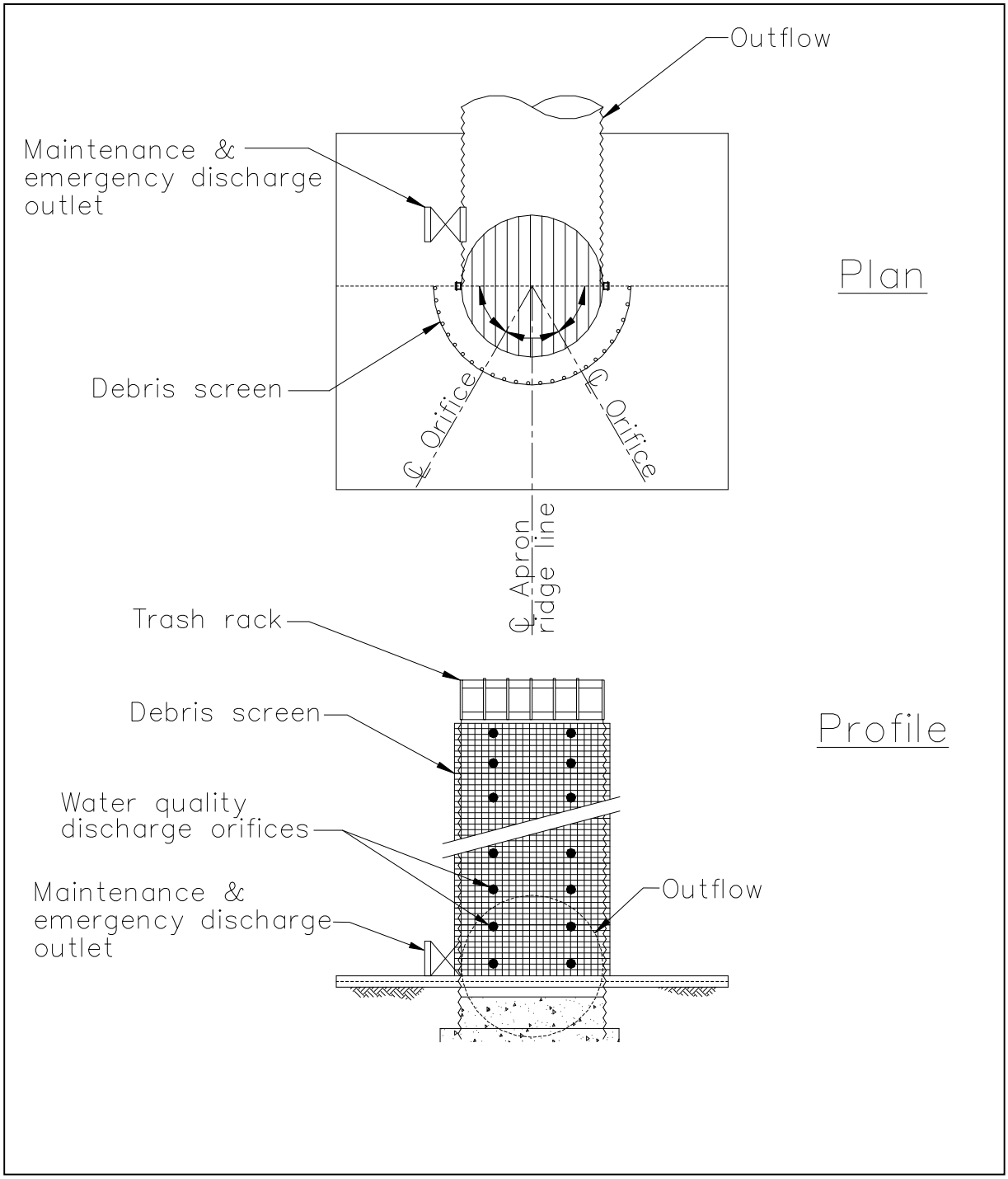


FIGURE 2: MULTIPLE ORIFICE OUTLET RISER

NOT TO SCALE

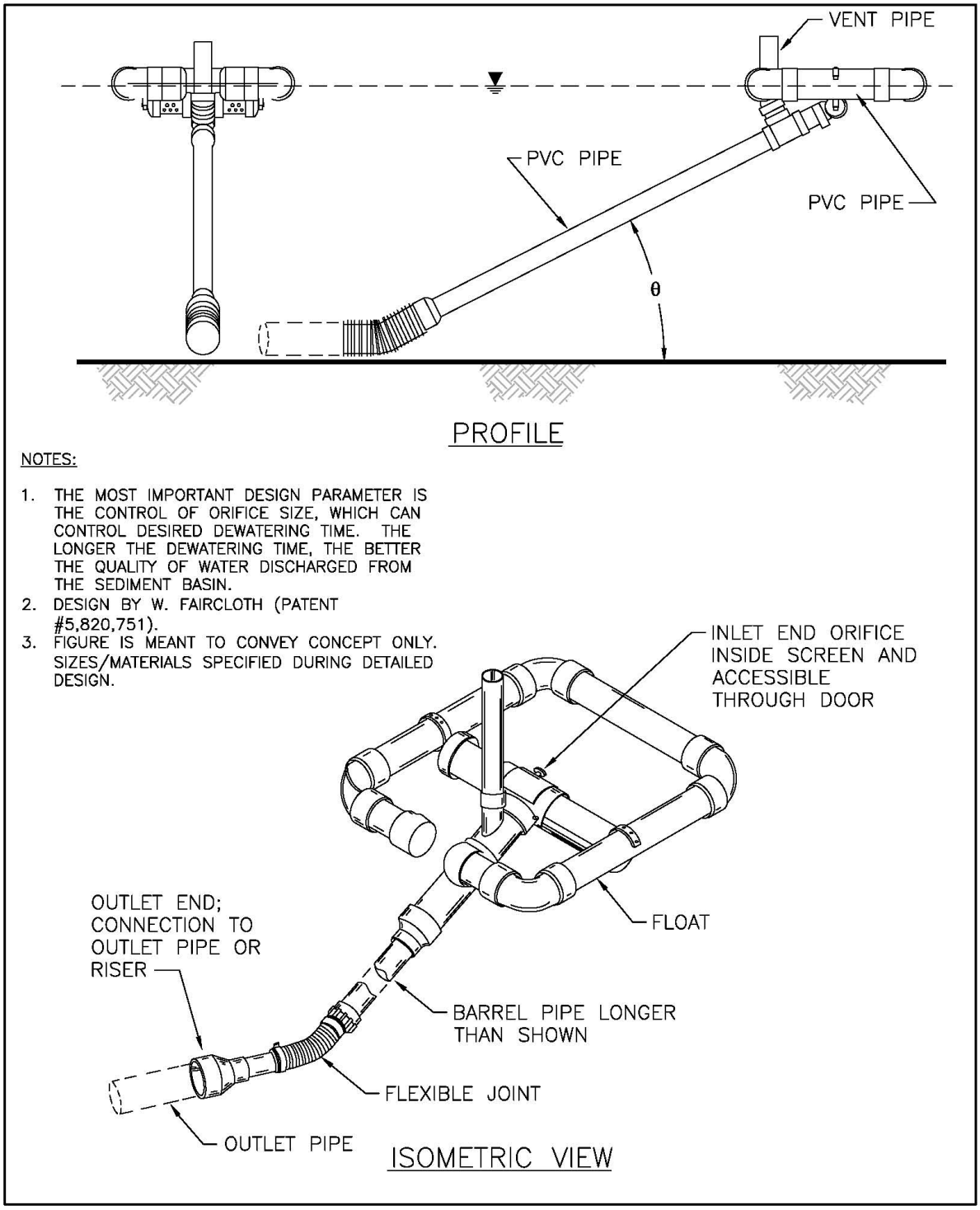


FIGURE 3: TYPICAL SKIMMER

NOT TO SCALE

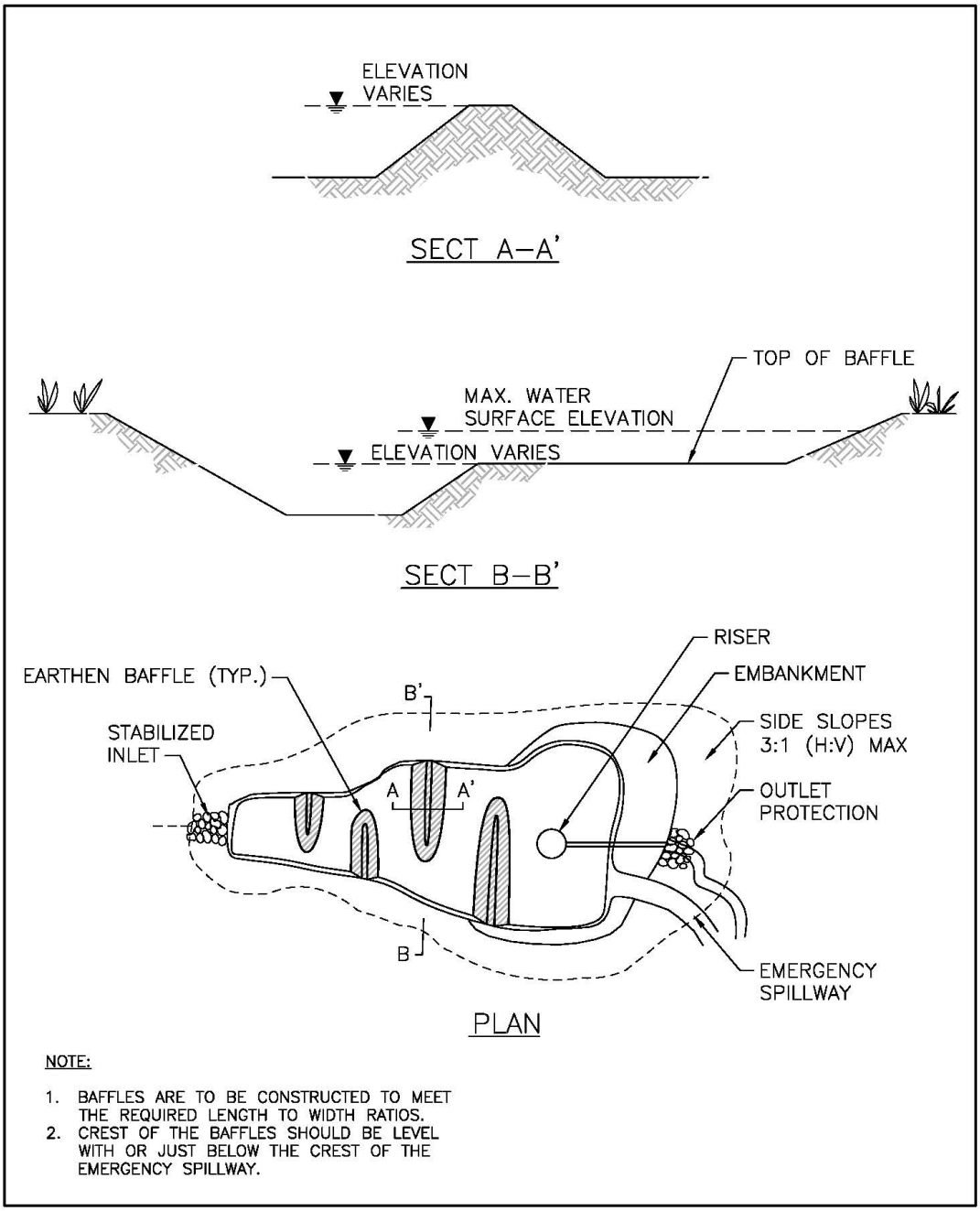
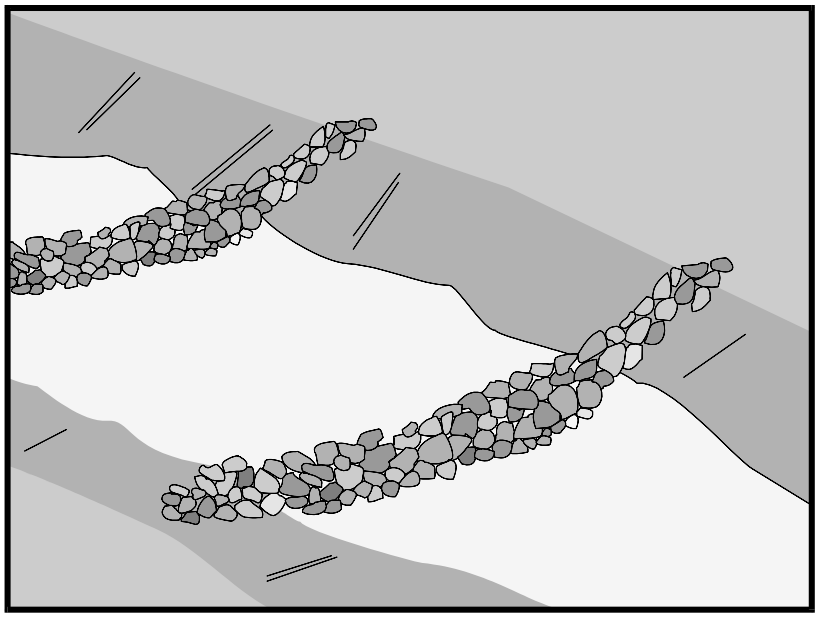


FIGURE 4: TYPICAL TEMPORARY SEDIMENT BASIN WITH BAFFLES
NOT TO SCALE

Check Dams SE-4



Description and Purpose

A check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing scour and channel erosion by reducing flow velocity and increasing residence time within the channel, allowing sediment to settle.

Suitable Applications

Check dams may be appropriate in the following situations:

- To promote sedimentation behind the dam.
- To prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales.
- In small open channels that drain 10 acres or less.
- In steep channels where stormwater runoff velocities exceed 5 ft/s.
- During the establishment of grass linings in drainage ditches or channels.
- In temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings.
- To act as a grade control structure.

Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-12 Manufactured Linear Sediment Controls
- SE-14 Biofilter Bags

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Limitations

- Not to be used in live streams or in channels with extended base flows.
- Not appropriate in channels that drain areas greater than 10 acres.
- Not appropriate in channels that are already grass-lined unless erosion potential or sediment-laden flow is expected, as installation may damage vegetation.
- Require extensive maintenance following high velocity flows.
- Promotes sediment trapping which can be re-suspended during subsequent storms or removal of the check dam.
- Do not construct check dams with straw bales or silt fence.
- Water suitable for mosquito production may stand behind check dams, particularly if subjected to daily non-stormwater discharges.

Implementation

General

Check dams reduce the effective slope and create small pools in swales and ditches that drain 10 acres or less. Using check dams to reduce channel slope reduces the velocity of stormwater flows, thus reducing erosion of the swale or ditch and promoting sedimentation. Thus, check dams are dual-purpose and serve an important role as erosion controls as well as sediment controls. Note that use of 1-2 isolated check dams for sedimentation will likely result in little net removal of sediment because of the small detention time and probable scour during longer storms. Using a series of check dams will generally increase their effectiveness. A sediment trap (SE-3) may be placed immediately upstream of the check dam to increase sediment removal efficiency.

Design and Layout

Check dams work by decreasing the effective slope in ditches and swales. An important consequence of the reduced slope is a reduction in capacity of the ditch or swale. This reduction in capacity should be considered when using this BMP, as reduced capacity can result in overtopping of the ditch or swale and resultant consequences. In some cases, such as a "permanent" ditch or swale being constructed early and used as a "temporary" conveyance for construction flows, the ditch or swale may have sufficient capacity such that the temporary reduction in capacity due to check dams is acceptable. When check dams reduce capacities beyond acceptable limits, either:

- Don't use check dams. Consider alternative BMPs, or.
- Increase the size of the ditch or swale to restore capacity.

Maximum slope and velocity reduction is achieved when the toe of the upstream dam is at the same elevation as the top of the downstream dam (see "Spacing Between Check Dams" detail at the end of this fact sheet). The center section of the dam should be lower than the edge sections (at least 6 inches), acting as a spillway, so that the check dam will direct flows to the center of

the ditch or swale (see "Typical Rock Check Dam" detail at the end of this fact sheet). Bypass or side-cutting can occur if a sufficient spillway is not provided in the center of the dam.

Check dams are usually constructed of rock, gravel bags, sandbags, and fiber rolls. A number of products can also be used as check dams (e.g. HDPE check dams, temporary silt dikes (SE-12)), and some of these products can be removed and reused. Check dams can also be constructed of logs or lumber and have the advantage of a longer lifespan when compared to gravel bags, sandbags, and fiber rolls. Check dams should not be constructed from straw bales or silt fences, since concentrated flows quickly wash out these materials.

Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel. The dam should completely span the ditch or swale to prevent washout. The rock used should be large enough to stay in place given the expected design flow through the channel. It is recommended that abutments be extended 18 in. into the channel bank. Rock can be graded such that smaller diameter rock (e.g. 2-4 in) is located on the upstream side of larger rock (holding the smaller rock in place); increasing residence time.

Log check dams are usually constructed of 4 to 6 in. diameter logs, installed vertically. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.

See fiber rolls, SE-5, for installation of fiber roll check dams.

Gravel bag and sand bag check dams are constructed by stacking bags across the ditch or swale, shaped as shown in the drawings at the end of this fact sheet (see "Gravel Bag Check Dam" detail at the end of this fact sheet).

Manufactured products, such as temporary silt dikes (SE-12), should be installed in accordance with the manufacturer's instructions. Installation typically requires anchoring or trenching of products, as well as regular maintenance to remove accumulated sediment and debris.

If grass is planted to stabilize the ditch or swale, the check dam should be removed when the grass has matured (unless the slope of the swales is greater than 4%).

The following guidance should be followed for the design and layout of check dams:

- Install the first check dam approximately 16 ft from the outfall device and at regular intervals based on slope gradient and soil type.
- Check dams should be placed at a distance and height to allow small pools to form between each check dam.
- For multiple check dam installation, backwater from a downstream check dam should reach the toes of the upstream check dam.
- A sediment trap provided immediately upstream of the check dam will help capture sediment. Due to the potential for this sediment to be resuspended in subsequent storms, the sediment trap should be cleaned following each storm event.

- High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale.

Materials

- Rock used for check dams should typically be 8-12 in rock and be sufficiently sized to stay in place given expected design flows in the channel. Smaller diameter rock (e.g. 2 to 4 in) can be placed on the upstream side of larger rock to increase residence time.
- Gravel bags used for check dams should conform to the requirements of SE-6, Gravel Bag Berms.
- Sandbags used for check dams should conform to SE-8, Sandbag Barrier.
- Fiber rolls used for check dams should conform to SE-5, Fiber Rolls.
- Temporary silt dikes used for check dams should conform to SE-12, Temporary Silt Dikes.

Installation

- Rock should be placed individually by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage.
- Tightly abut bags and stack according to detail shown in the figure at the end of this section (pyramid approach). Gravel bags and sandbags should not be stacked any higher than 3 ft.
- Upper rows or gravel and sand bags shall overlap joints in lower rows.
- Fiber rolls should be trenched in, backfilled, and firmly staked in place.
- Install along a level contour.
- HDPE check dams, temporary silt dikes, and other manufactured products should be used and installed per manufacturer specifications.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Replace missing rock, bags, rolls, etc. Replace bags or rolls that have degraded or have become damaged.
- If the check dam is used as a sediment capture device, sediment that accumulates behind the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.

- If the check dam is used as a grade control structure, sediment removal is not required as long as the system continues to control the grade.
- Inspect areas behind check dams for pools of standing water, especially if subjected to daily non-stormwater discharges.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

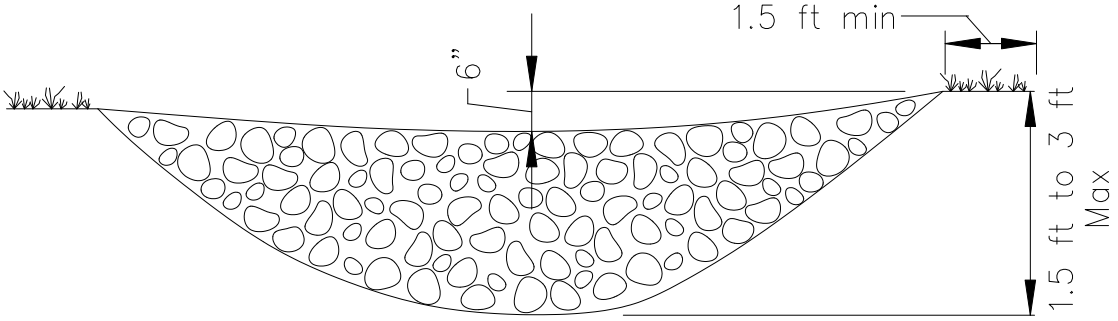
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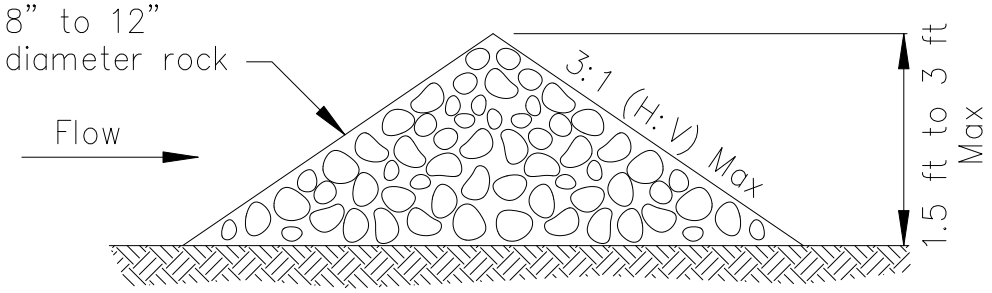
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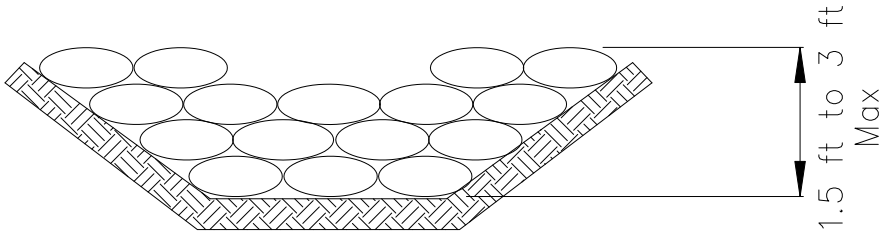


ELEVATION

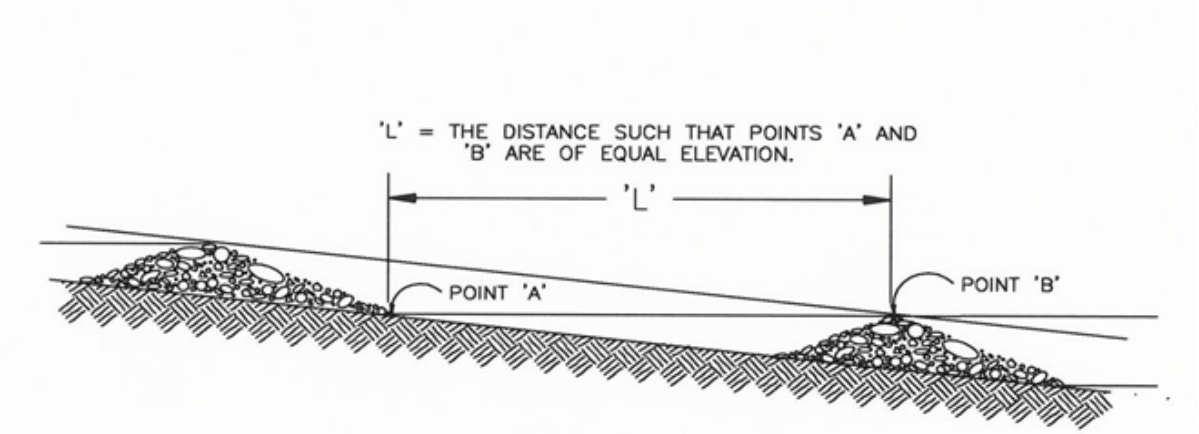


TYPICAL ROCK CHECK DAM SECTION

ROCK CHECK DAM
NOT TO SCALE

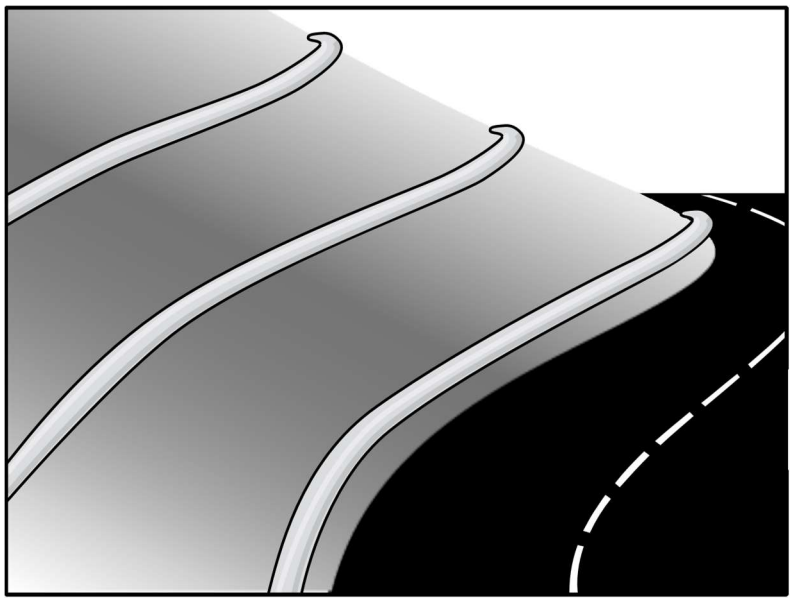


GRAVEL BAG CHECK DAM ELEVATION
NOT TO SCALE



SPACING BETWEEN CHECK DAMS

Fiber Rolls SE-5



Description and Purpose

A fiber roll (also known as a wattle or log) consists of straw, coir, curled wood fiber, or other biodegradable materials bound into a tight tubular roll wrapped by netting. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight, when staking the rolls are not feasible (such as use as inlet protection).

When fiber rolls are placed at the top, toe, and on the face of slopes along the contours, fiber rolls intercept runoff, reduce flow velocity, release runoff as sheet flow, and provide sediment removal from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

Suitable Applications

Fiber rolls may be suitable:

- Along the top, toe, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.

Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-12 Manufactured Linear Sediment Controls
SE-13 Compost Socks and Berms
SE-14 Biofilter Bags

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- At operational storm drains as a form of inlet protection.
- Around temporary stockpiles.

Limitations

- Fiber rolls are to be used in conjunction with erosion control, such as hydroseed, mulch, rolled erosion control products (RECPs), etc.
- Only biodegradable fiber rolls containing no plastic can remain on a site when applying for a Notice of Termination (NOT) due to plastic pollution and wildlife concerns. There may be further limitations on the use of plastic wrapped fiber rolls in wildlife sensitive areas. Fiber rolls containing plastic must be removed and disposed of prior to final stabilization.
- Do not install fiber rolls in high traffic areas where vehicles and equipment will displace or damage them.
- Do not use fiber rolls on paved surfaces where they cannot be staked and trenched in. Only gravel core rolls may be effective in this situation. See Gravel Bags (SE-6), Manufactured Linear Sediment Controls (SE-12), Compost Socks and Berms (SE-13), and Biofilter Bags (SE-14) for situations where staking or trenching is not possible.
- Do not use fiber rolls on slopes subject to creep, slumping, or landslides.
- Improper installation of a fiber roll such as not being trenched in, not staked appropriately, or not sufficiently overlapping at the ends, may cause undercutting and increased erosion.
- Fiber rolls installed by the Type 1 method are not effective unless trenched in and staked. If not properly staked and trenched in, fiber rolls will not work as intended and could be transported by high flows.
- Fiber rolls installed by the Type 2 method are not effective unless staked. If not properly staked in, fiber rolls will not work as intended and could be transported by high flows.
- Not intended for use in concentrated flows.
- Not intended to contain stormwater. See Sediment Basin (SE-2) or Sediment Trap (SE-3) for stormwater containment BMPs.
- Difficult to move once saturated.
- Difficult to repair when a small section of the fiber roll is damaged. Replacement of the entire fiber roll or installation of an additional fiber roll adjacent to the damage is often required.
- Fiber rolls are susceptible to damage from wildlife.
- Fiber rolls have a limited sediment capture zone.
- Fiber rolls typically function for 12-24 months, depending upon local conditions, roll material, and installation method. For example, the Type 2 installation method may last longer than the Type 1 installation method because the fiber roll is not penetrated.

- Fiber rolls that come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll, are considered passive treatment technologies and are subject to additional requirements, see Passive Treatment (SE-15).

Implementation

Fiber Roll Materials

- Fiber rolls are to be prefabricated.
- Fiber rolls are made from weed-free rice straw, flax, curled wood fiber, or coir bound into a tight tubular roll by netting or wrap (see Limitations above regarding plastic netting).
- Typical fiber rolls vary in diameter from 6 in. to 20 in. Larger diameter rolls are available as well. The larger the roll diameter, the higher the sediment retention capacity.
- Typical fiber rolls lengths are 4, 10, 20 and 25 ft., although other lengths may be available.

Installation

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination between 20:1 and 4:1 -20 (H:V): Place fibers rolls at a maximum interval of 35 ft.
  - Slope inclination of 4:1 (H:V): Place fiber rolls at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Place fiber rolls at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Place fiber rolls at a maximum interval of 10 ft. (a closer spacing is more effective).
- It is critical that fiber rolls are installed perpendicular to water flow and parallel to the slope contour.
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth is to be ¼ to 1/3 of the thickness of the roll, and the width is to be equal to the roll diameter, in order to provide area to backfill the trench.
- Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- For Type 1 installations:
  - Place in a trench that is from 2 to 4 inches deep.
  - Fasten with wood stakes every 4 feet along the length of the fiber roll.
  - Fasten the ends of the fiber roll by placing a stake 6 inches from the end of the roll.

- Drive the stakes into the soil so the top of the stake is less than 2 inches above the top of the fiber roll.

- For Type 2 installations (Caltrans, 2024):
  - Trenching in the fiber rolls is optional.
  - J-hook the ends of the fiber roll up-slope to prevent runoff from going around the fiber roll.
  - Drive stakes along alternating sides of each fiber roll, spaced 2 ft. apart. Stakes are to alternate between upslope and downslope of the fiber roll.
  - Lace the rope tightly around the stakes and over the fiber roll. Knot the rope at each stake.
  - Tighten the fiber roll to the surface of the slope by driving the stakes further into the soil.
- If more than one fiber roll is placed in a row, the rolls should overlap, not abut at the ends. Stagger overlapping joints in adjacent rows by 5 to 10 feet.
- See typical fiber roll installation details at the end of this fact sheet.

Removal

- Fiber rolls can be left in place or be removed depending on the type of fiber roll and its application (temporary vs. permanent installation).
- For temporary installations, only remove fiber rolls when upgradient areas are stabilized per General Permit requirements, and/or pollutant sources are no longer present. Remove fiber rolls before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.
- For permanent installations for final stabilization, fiber rolls encased with plastic netting or containing any plastic material are to be removed from the site. If a fiber roll is to be left in place as part of a final stabilization design, the fiber roll must be non-plastic, made of plant-based materials (e.g., burlap-wrapped, coconut jute netting, and any other plant-based netting), and fully biodegradable.
- Fiber rolls can be an effective component of a final stabilization system, if all components of the fiber rolls are plant-based, fully biodegradable, and the fiber rolls are coupled with fully biodegradable effective erosion control measures (hydroseeding, RECPs, etc.) properly applied/installed per manufacturer's specifications and/or per the current CASQA BMP Fact Sheets. Removal of fiber rolls that are used as part of a final stabilization system can result in greater disturbance; therefore, during the BMP planning phase, only specify fiber rolls wrapped in non-plastic fully biodegradable materials for areas where fiber rolls will be used on final slopes.

Inspection and Maintenance

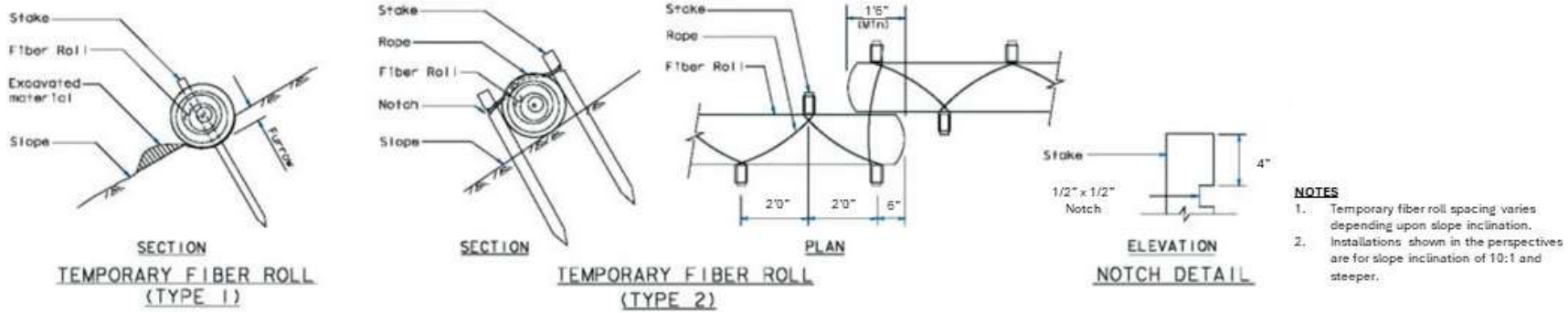
- BMPs are to be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that BMPs be inspected weekly at a minimum and prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair/replace split, torn, unraveling, or slumping fiber rolls as needed.
- Replace fiber rolls when they are disintegrated, flattened, and no longer effective.
- If construction activities or access to a work area are impaired by a fiber roll, move the fiber roll to avoid its damage or disintegration. Reinstall the fiber roll once active work is complete.
- If a fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, periodically remove sediment that accumulates upgradient of the fiber roll to maintain BMP effectiveness. Remove sediment when sediment accumulation reaches one-third of the height of the fiber roll.
- If fiber rolls are used for erosion control, such as in a check dam, sediment removal may not be required as long as the system continues to control the grade. Sediment control BMPs will be implemented in conjunction with this type of application.
- Repair any undercutting, rills, and gullies promptly.

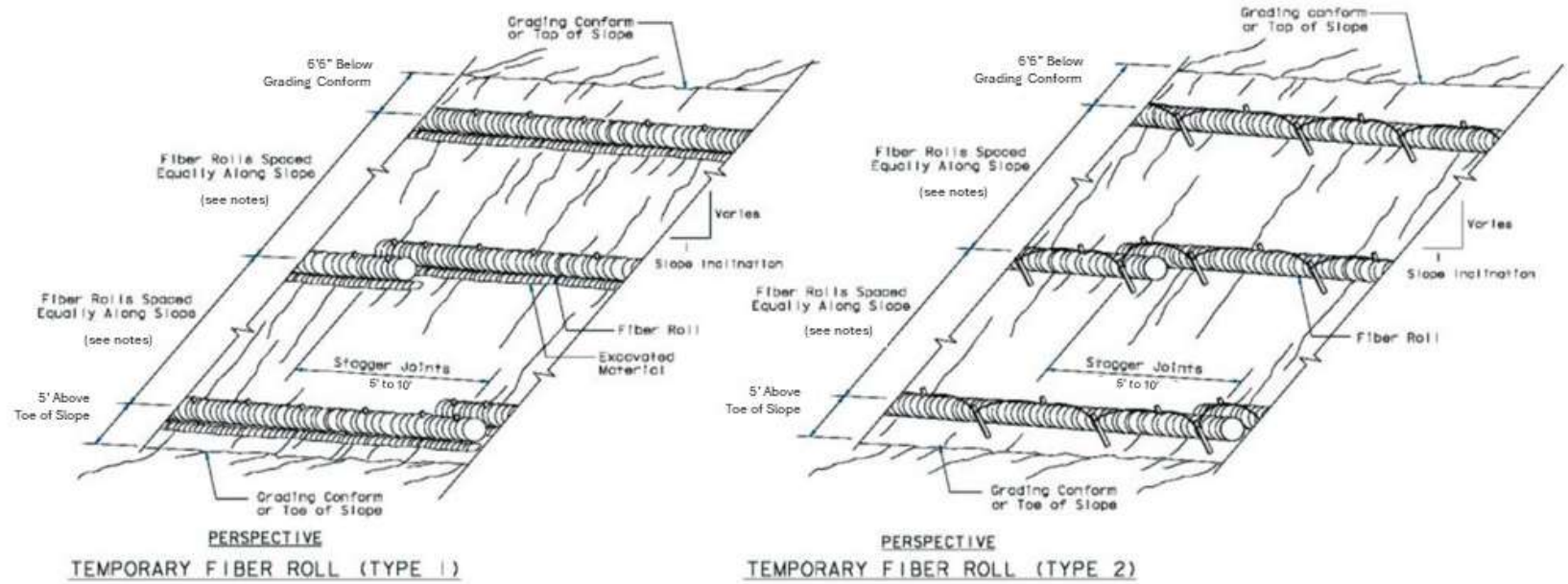
References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425-11.1, Section 4, Fiber Rolls SC-5, California Department of Transportation (Caltrans), March 2024.

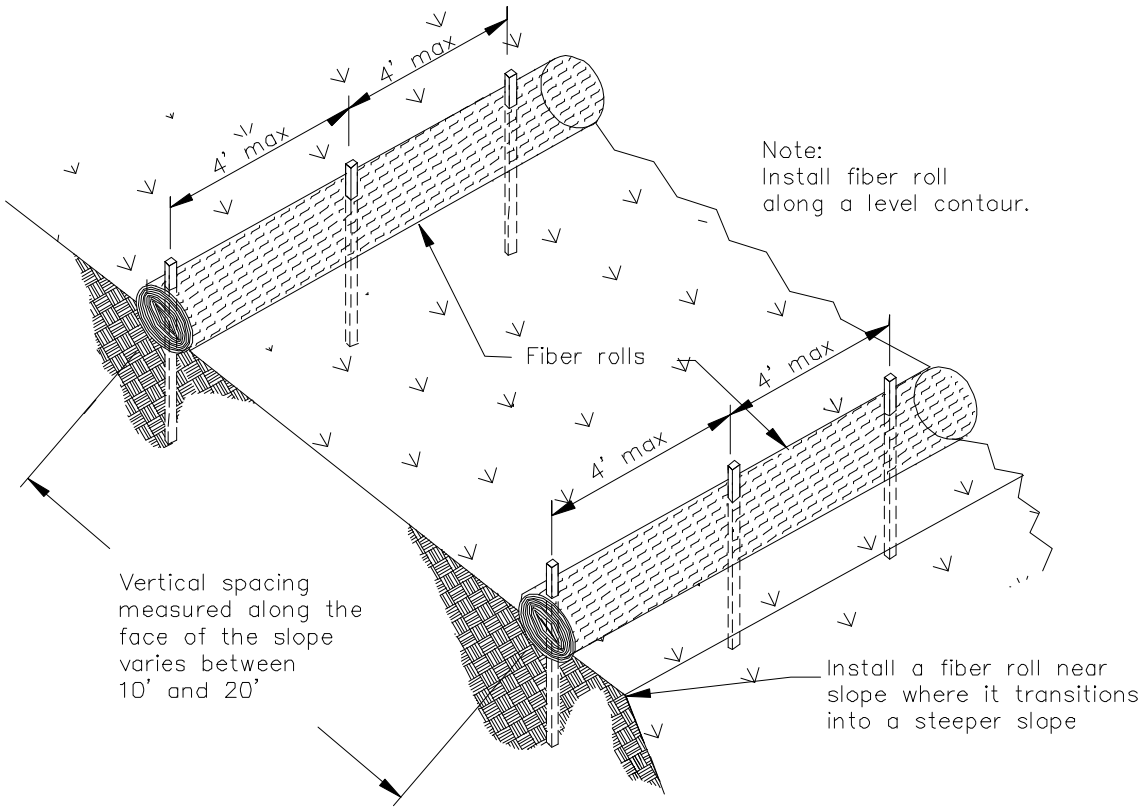
Construction Stormwater Program website, State Water Resources Control Board, online at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html

Order 2022-0057-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharge Elimination System (NDPES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit), California State Water Resources Control Board (State Water Board), September 2022.

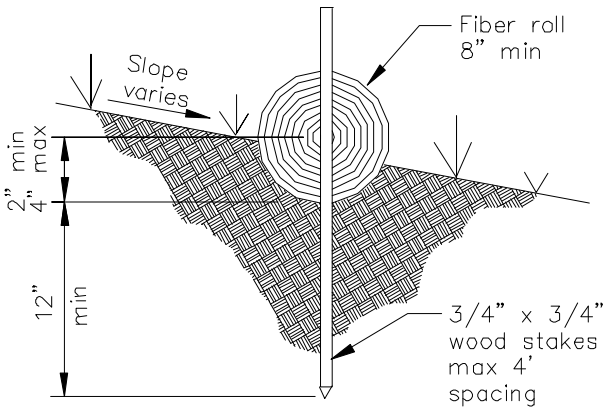




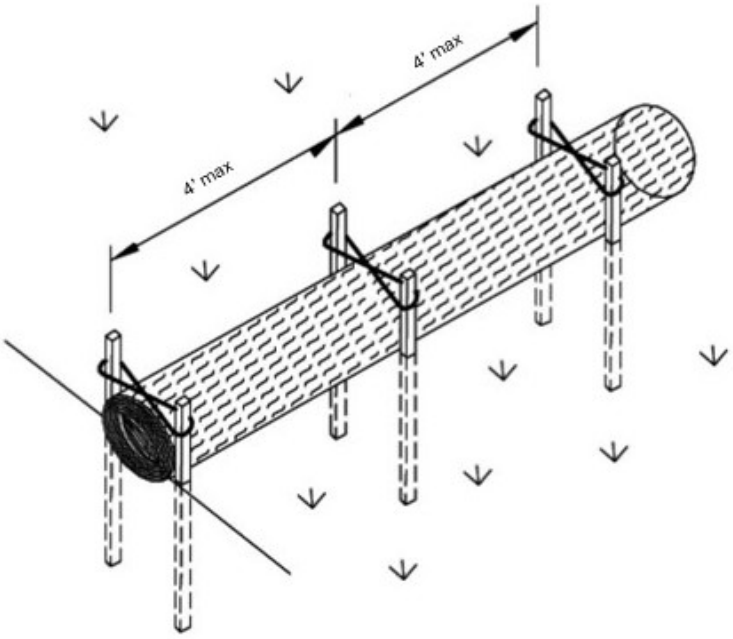
Reference: Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425-11.1, Section 4, Fiber Rolls SC-5, California Department of Transportation (Caltrans), March 2024.

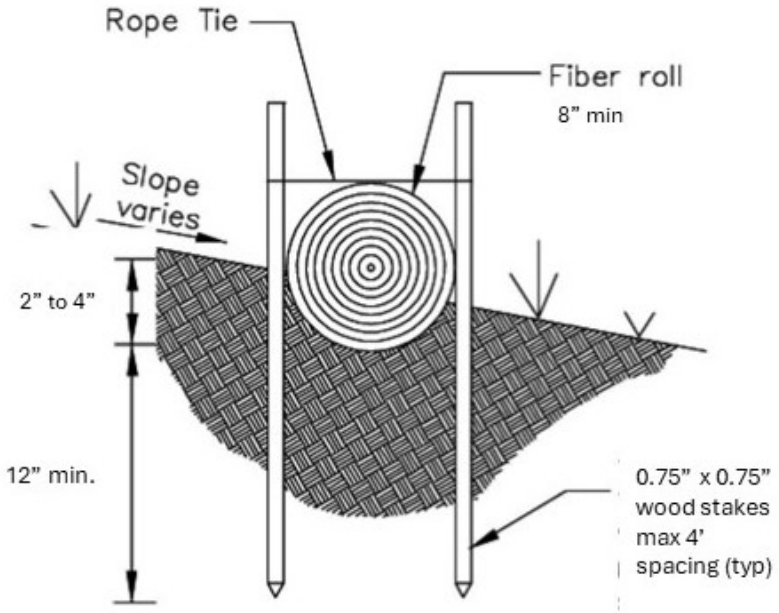


TYPICAL FIBER ROLL INSTALLATION
N.T.S.



ENTRENCHMENT DETAIL
N.T.S.



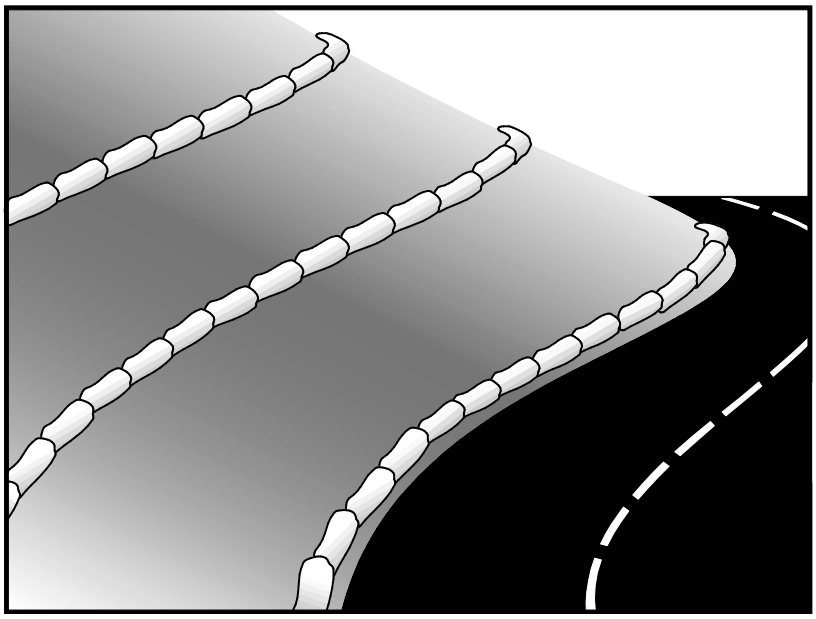


OPTIONAL ENTRENCHMENT DETAIL

N.T.S.

Reference: Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425-11.1, Section 4, Fiber Rolls SC-5, California Department of Transportation (Caltrans), March 2024.

Gravel Bag Berm SE-6



Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flow, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As a linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-8 Sandbag Barrier

SE-12 Temporary Silt Dike

SE-14 Biofilter Bags

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- At the top of slopes to divert runoff away from disturbed slopes.
- As chevrons (small check dams) across mildly sloped construction roads. For use check dam use in channels, see SE-4, Check Dams.

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the berm, possibly causing flooding if sufficient space does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Durability of gravel bags is somewhat limited, and bags may need to be replaced when installation is required for longer than 6 months.
- Easily damaged by construction equipment.
- When used to detain concentrated flows, maintenance requirements increase.

Implementation

General

A gravel bag berm consists of a row of open graded gravel-filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding allows sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers but are more porous. Generally, gravel bag berms should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

Design and Layout

- Locate gravel bag berms on level contours.
- When used for slope interruption, the following slope/sheet flow length combinations apply:
  - Slope inclination of 4:1 (H:V) or flatter: Gravel bags should be placed at a maximum interval of 20 ft, with the first row near the slope toe.
  - Slope inclination between 4:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 15 ft. (a closer spacing is more effective), with the first row near the slope toe.

Slope inclination 2:1 (H:V) or greater: Gravel bags should be placed at a maximum interval of 10 ft. (a closer spacing is more effective), with the first row near the slope toe.

- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, gravel bag barriers should be set back from the slope toe to facilitate cleaning. Where specific site conditions do not allow for a set-back, the gravel bag barrier may be constructed on the toe of the slope. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more-layer construction
  - Top width = 12 in. minimum for one- or two-layer construction
  - Side slopes = 2:1 (H:V) or flatter
- In Construction Traffic Areas:
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more-layer construction.
  - Top width = 12 in. minimum for one- or two-layer construction.
  - Side slopes = 2:1 (H:V) or flatter.
- Butt ends of bags tightly.
- On multiple row, or multiple layer construction, overlap butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

Materials

- ***Bag Material:*** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.

- ***Bag Size:*** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal and may vary based on locally available materials.

- ***Fill Material:*** Fill material should be 0.5 to 1 in. Crushed rock, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.

- Reshape or replace gravel bags as needed.

- Repair washouts or other damage as needed.

- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.

- Remove gravel bag berms when no longer needed and recycle gravel fill whenever possible and properly dispose of bag material. Remove sediment accumulation and clean, re-grade, and stabilize the area.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Street Sweeping and Vacuuming SE-7



Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

- Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).
- Sweeping may be less effective for fine particle soils (i.e., clay).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused and perhaps save money.
- Inspect potential sediment tracking locations daily.

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- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.
- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

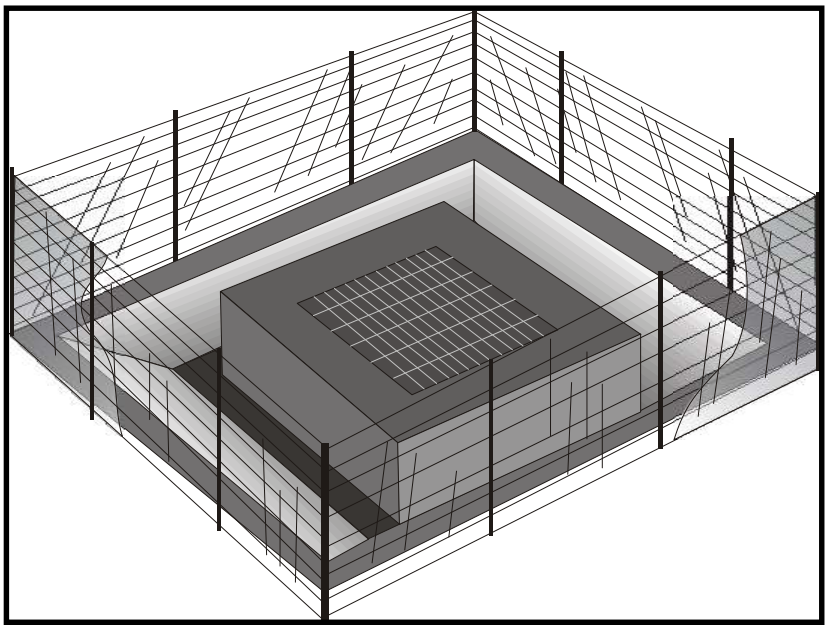
Inspection and Maintenance

- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Storm Drain Inlet Protection SE-10



Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

SE-13 Compost Socks and Berms

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Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water.

Suitable Applications

- Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Inlet protection should be used in conjunction with other erosion and sediment controls to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

Limitations

- Drainage area should not exceed 1 acre.
- In general straw bales should not be used as inlet protection.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.
- Sediment removal may be inadequate to prevent sediment discharges in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use

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other onsite sediment trapping techniques in conjunction with inlet protection.

- Frequent maintenance is required.
- Limit drainage area to 1 acre maximum. For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

Implementation

General

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap and/or used in conjunction with other drainage control, erosion control, and sediment control BMPs to protect the site. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Alternative methods are available in addition to the methods described/shown herein such as prefabricated inlet insert devices, or gutter protection devices.

Design and Layout

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- The key to successful and safe use of storm drain inlet protection devices is to know where runoff that is directed toward the inlet to be protected will pond or be diverted as a result of installing the protection device.
  - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.
  - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.
- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.
- Seven types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.

- Silt Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.

- Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).

- Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.

- Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.

- Temporary Geotextile Storm drain Inserts: Different products provide different features. Refer to manufacturer details for targeted pollutants and additional features.

- Biofilter Bag Barrier: Used to create a small retention area upstream of inlets and can be located on pavement or soil. Biofilter bags slowly filter runoff allowing sediment to settle out. Appropriate for flows under 0.5 cfs.

- Compost Socks: Allow filtered run-off to pass through the compost while retaining sediment and potentially other pollutants (SE-13). Appropriate for flows under 1.0 cfs.

- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.

- Provide area around the inlet for water to pond without flooding structures and property.

- Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.

- Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

Installation

- ***DI Protection Type 1 - Silt Fence -*** Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced and water flow through the grate will be blocked resulting in flooding. See typical Type 1 installation details at the end of this fact sheet.

  1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.

  2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes should be at least 48 in.

  3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.

4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.

5. Backfill the trench with gravel or compacted earth all the way around.

- ***DI Protection Type 2 - Excavated Drop Inlet Sediment Trap -*** Install filter fabric fence in accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd^3/acre of drainage area. See typical Type 2 installation details at the end of this fact sheet.

- ***DI Protection Type 3 - Gravel bag -*** Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability. See typical Type 3 installation details at the end of this fact sheet.

1. Construct on gently sloping street.

2. Leave room upstream of barrier for water to pond and sediment to settle.

3. Place several layers of gravel bags – overlapping the bags and packing them tightly together.

4. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10-year storm) should not overtop the curb.

- ***DI Protection Type 4 – Block and Gravel Filter -*** Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction. See typical Type 4 installation details at the end of this fact sheet.

1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place woven geotextile over the wire mesh.

2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks should be at least 12 in. but no greater than 24 in. high.

3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.

4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.

- ***DI Protection Type 5 – Temporary Geotextile Insert (proprietary) –*** Many types of temporary inserts are available. Most inserts fit underneath the grate of a drop inlet or inside of a curb inlet and are fastened to the outside of the grate or curb. These inserts are

removable, and many can be cleaned and reused. Installation of these inserts differs between manufacturers. Please refer to manufacturer instruction for installation of proprietary devices.

- ***DI Protection Type 6 - Biofilter bags*** – Biofilter bags may be used as a substitute for gravel bags in low-flow situations. Biofilter bags should conform to specifications detailed in SE-14, Biofilter bags.

    1. Construct in a gently sloping area.
    2. Biofilter bags should be placed around inlets to intercept runoff flows.
    3. All bag joints should overlap by 6 in.
    4. Leave room upstream for water to pond and for sediment to settle out.
    5. Stake bags to the ground as described in the following detail. Stakes may be omitted if bags are placed on a paved surface.

- ***DI Protection Type 7 – Compost Socks*** – A compost sock can be assembled on site by filling a mesh sock (e.g., with a pneumatic blower). Compost socks do not require special trenching compared to other sediment control methods (e.g., silt fence). Compost socks should conform to specification detailed in SE-13, Compost Socks and Berms.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Silt Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes. At a minimum, remove the sediment behind the fabric fence when accumulation reaches one-third the height of the fence or barrier height.

- Gravel Filters. If the gravel becomes clogged with sediment, it should be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.

- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.

- Inspect and maintain temporary geotextile insert devices according to manufacturer's specifications.

- Remove storm drain inlet protection once the drainage area is stabilized.

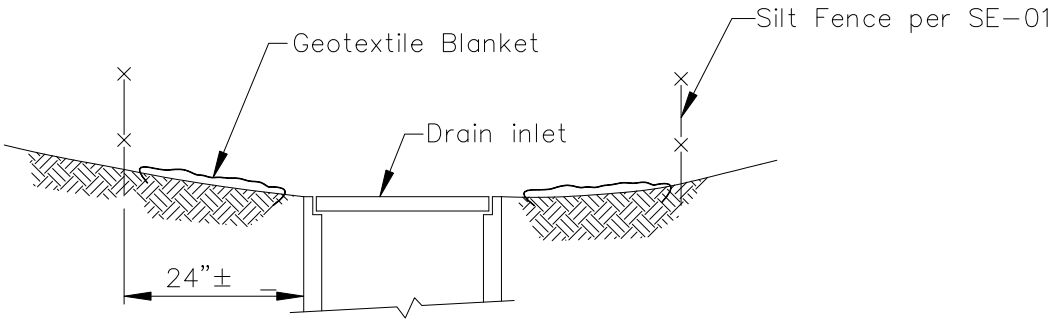
- Clean and regrade area around the inlet and clean the inside of the storm drain inlet, as it should be free of sediment and debris at the time of final inspection.

References and Additional Resources

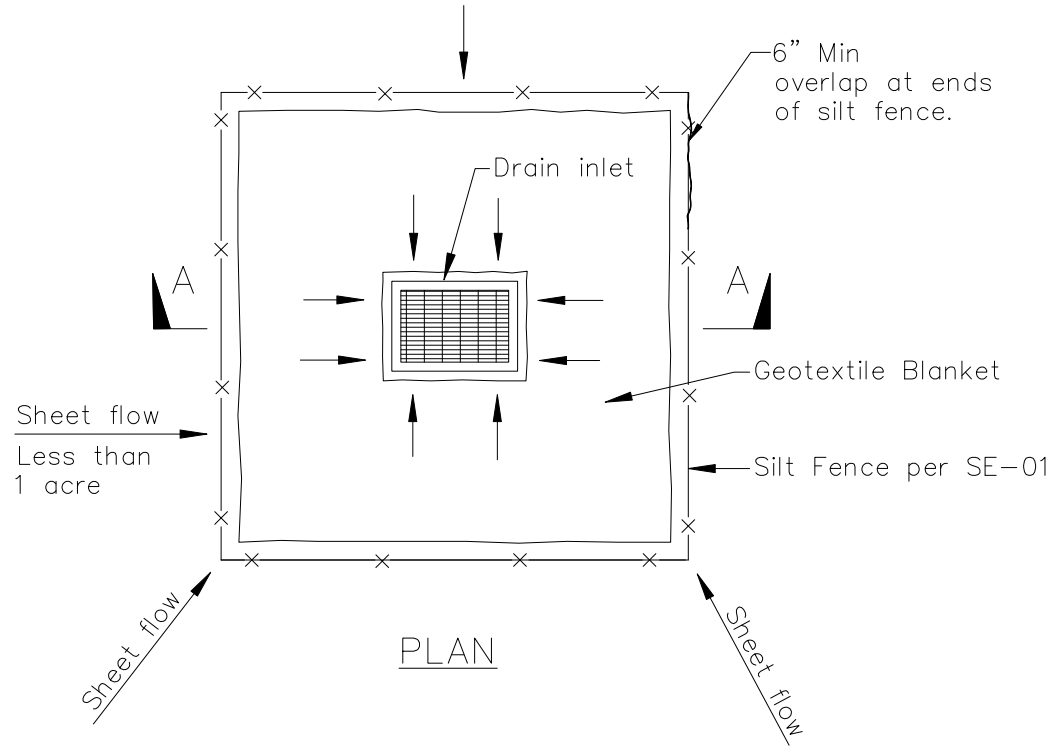
Construction Site Best Management Practices (BMPs) Manual CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



SECTION A–A

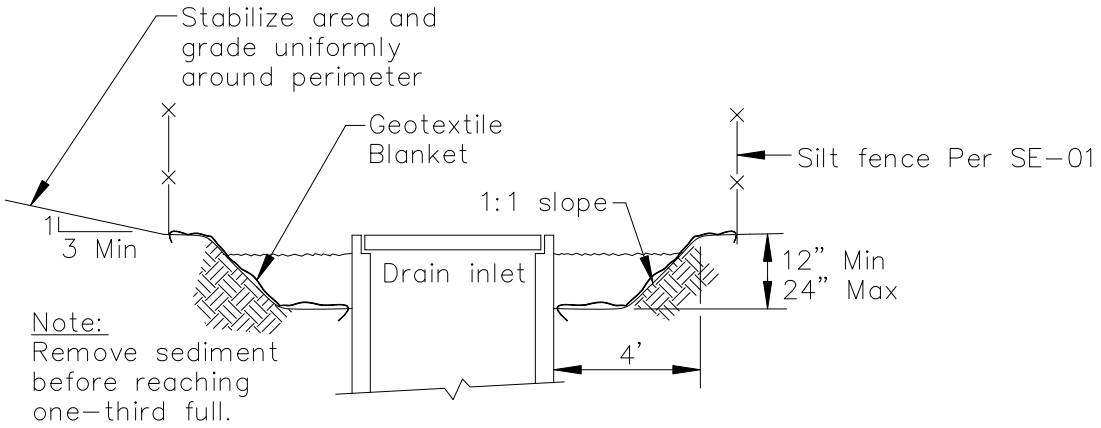


PLAN

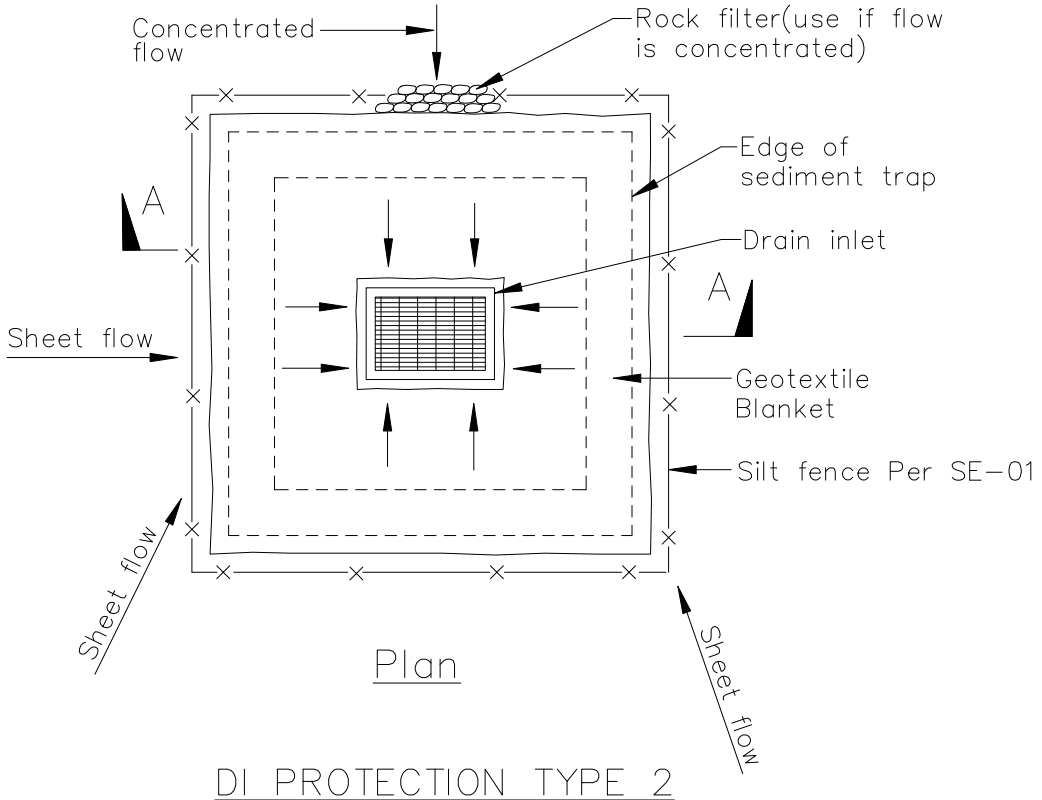
DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:

1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.



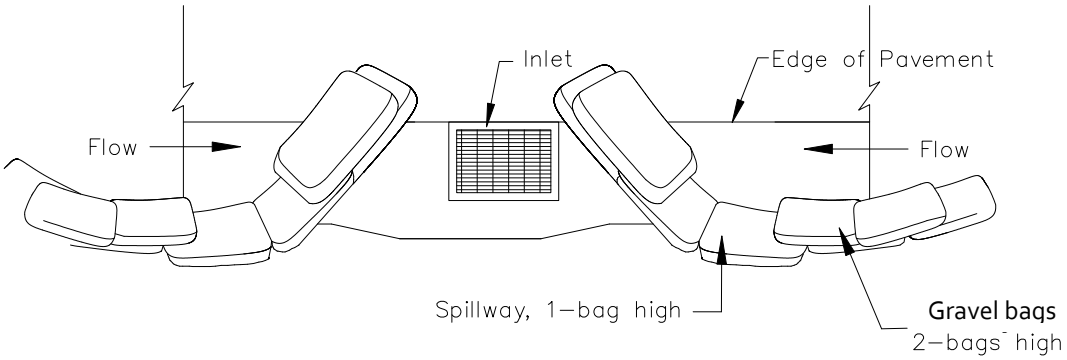
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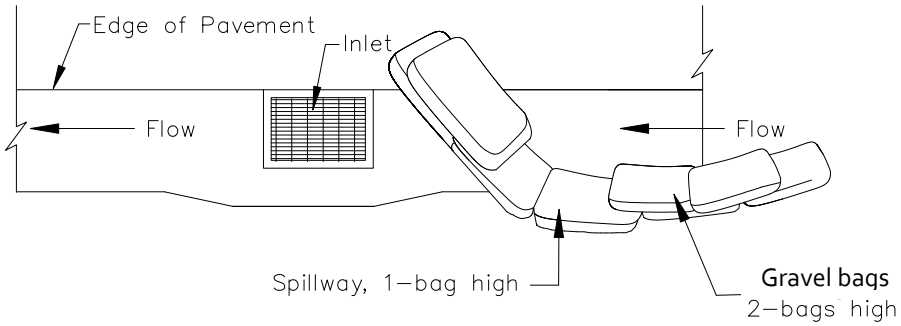
Plan

DI PROTECTION TYPE 2
NOT TO SCALE

Notes
1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



TYPICAL PROTECTION FOR INLET ON SUMP

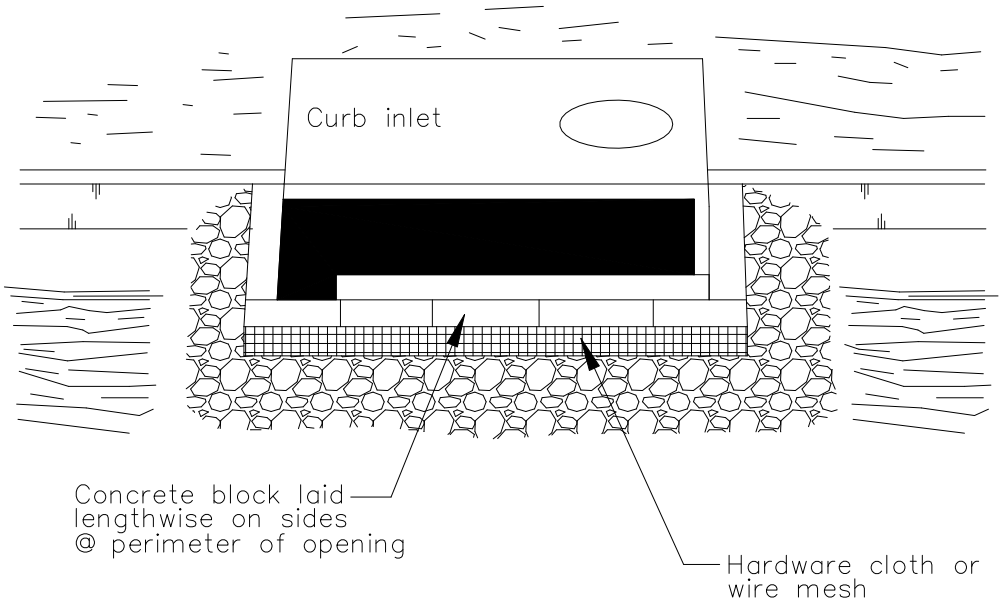


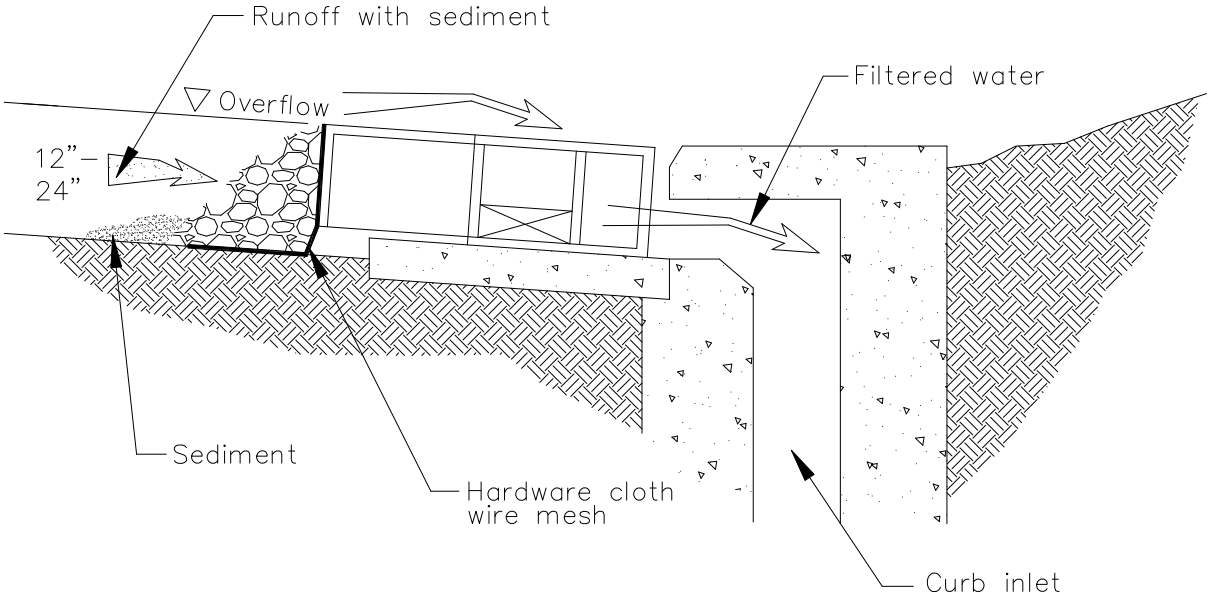
TYPICAL PROTECTION FOR INLET ON GRADE

NOTES:

1. Intended for short–term use.
2. Use to inhibit non–storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.
6. Protection can be effective even if it is not immediately adjacent to the inlet provided that the inlet is protected from potential sources of pollution.

DI PROTECTION TYPE 3
NOT TO SCALE





DI PROTECTION – TYPE 4

NOT TO SCALE

Compost Socks and Berms SE-13



Description and Purpose

Compost socks and compost berms function as three-dimensional biodegradable filtering structures that can reduce runoff velocities, and in some cases, aid in establishing vegetation.

When employed to intercept sheet flow, both best management practices (BMPs) are placed perpendicular to the flow of runoff, allowing filtered runoff to pass through the compost and retain sediment (and potentially other pollutants). They are both generally installed along the site perimeter or at intervals on sloped areas.

Compost is typically derived from combinations of feedstocks, biosolids, leaf and yard trimmings, manure, wood, or mixed solid waste. Many types of compost are products of municipal recycle or "Green Waste" programs. There are many types of compost with a variety of properties with specific functions, and accordingly compost selection is an important design consideration in the application of this type of erosion and sediment control.

The compost in a compost sock or compost berm can be selected to target site specific objectives in capturing sediment and other pollutants, supporting vegetation, or additional erosion control.

Categories

EC	Erosion Control	☒
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☒
Bacteria	☒
Oil and Grease	☒
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-14 Biofilter Bags

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Compost Socks and Berms SE-13

Compost Socks

- A compost sock is generally a mesh sock containing compost.
- A compost sock can be assembled onsite by filling a mesh sock (e.g., with a pneumatic blower) or compost socks can be pre-manufactured and delivered to a project site on a pallet.
- Compost sock mesh can be a knitted biodegradable material (e.g., cotton, wood fiber, jute) with mesh opening sizes between 1/16 and 3/8 in. Only biodegradable mesh wrapped compost socks can remain on the site as part of final stabilization. Any non-biodegradable materials used such as metal anchors or plastic netting must be removed from the site to achieve final stabilization.

Compost Berms

- A compost berm is a dike of compost, trapezoidal in cross section.
- A compost berm should be constructed using a backhoe or equivalent and/or a pneumatic delivery (blower) system and should be properly compacted.

Suitable Applications

Table 1 provides an overview of suitable applications for compost socks and compost berms.

Table 1: Suitable Applications of Compost Socks and Compost Berms

Applications	Compost Socks	Compost Berms
Along the toe, top, face, and at grade breaks of exposed erodible slopes to shorten slope length and spread runoff as sheet flow (slopes greater than 4:1 (H:V).	☑	
Along the toe, top, face, and at grade breaks of exposed erodible slopes to shorten slope length and spread runoff as sheet flow (slopes less than 4:1 (H:V).	☑	☑
Along project perimeter.	☑	☑
As check dams in unlined ditches.	☑	
At operational storm drains as a form of inlet protection.	☑	
Around temporary stockpiles.	☑	☑
Down-slope of exposed soil areas.	☑	☑

Compost socks and berms do not require special trenching or removal compared to other sediment control methods (e.g., silt fence or fiber rolls). Compost socks with biodegradable mesh and compost berms can remain in place after earth disturbing activities are completed or the compost components can be spread over the site providing nutrients for plant growth and augmenting soil structure. BMPs that remain in place are particularly advantageous below embankments, especially adjacent to streams, by limiting re-entry and the disturbance to sensitive areas.

Compost can be pre-seeded prior to application or seeded after installation (for compost berms only). Compost can be blended differently to enhance the removal of pollutants in stormwater including heavy metals, oil and grease, hydrocarbons, nutrients, and bacteria.

Limitations

Table 2 summarizes the limitations of compost socks and compost berms.

Table 2: Limitations of Compost Socks and Compost Berms

Limitations	Compost Socks	Compost Berms
Reduced performance if compost does not meet specifications shown in Table 3.	☑	☑
Reduced water quality if compost contains undesirable constituents.	☑	☑
Application by hand is time-intensive and potentially costly.		☑
Do not employ at the base of slopes greater than 2:1 (H:V) without employing with other erosion control methods for steeper slopes.	☑	☑
Difficult to move once installed and saturated.	☑	
Difficult to move once seeds germinate and root structure has formed.	☑	☑
Do not apply in areas of concentrated flows.		☑
Susceptible to damage by equipment and vehicles.	☑	☑
Do not place compost berms where ponded water could become an issue. Water ponded longer than 96 hours is subject to mosquito breeding; avoid when possible.	☑	☑

- Adherence to specifications (see Table 3) will help prevent reduced performance and undesirable constituents.
- Compost should be obtained from a supplier certified by the California Integrated Waste Management Board or compost should otherwise meet the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7. Carefully consider the qualifications and experience of any compost producer/supplier.
- Compost socks and berms are easy to fix and should be protected from damage by equipment and vehicles.
- Some Regional Water Quality Control Boards (RWQCBs) may require compost materials to be set back from a water body 303d listed for nutrients (CalRecycle, 2024). Confirm this requirement with the applicable RWQCB and the latest California Integrated Report.

Implementation

Compost Materials

- California Compost Regulations (Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3) establish compost quality for application. Compost should comply with all physical and chemical requirements. Specific requirements are provided in Table 3.
- When selecting compost, only use compost producers that are fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate Solid Waste Facilities. If exempt from State permitting requirements, the composting facility should certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

- The compost producer should be a participant in United States Composting Council's Seal of Testing Assurance program.
- Particle size is an important parameter for selecting compost. Coarser grades of compost perform better for filtration objectives. Select particle size of the compost based on site conditions, such as filtration goals, and/or long-term plant nutrients.
- Compost moisture should be considered for composition quality and application purposes. Compost that is too dry is hard to apply and compost that is too wet is more difficult (and more expensive) to transport. For arid or semi-arid areas, or for application during the dry season, use compost with greater moisture content than areas with wetter climates. For wetter or more humid climates or for application during the wet season, drier composts can be used as the compost will absorb moisture from the ambient air.
- If vegetation establishment is a desired function of the compost, a qualified individual should inspect a compost sample. Different vegetation types have different nutrient and moisture needs.
- Avoid compost derived from mixed municipal solid waste and inspect for visible contaminants.
- Use compost that has less than 0.5% physically inert material (dry weight basis).
- Use compost that is free of paint, petroleum products, pesticides, or any other chemical residues harmful to animal life or plant growth.
- Do not use compost that possesses objectionable odors.
- Use weed-free compost.

Table 3 summarizes the physical and chemical specifications for compost socks and compost berms.

Table 3. Physical/Chemical Specifications of Compost Socks and Compost Berms

Physical Property	Test Method	Requirement
pH Standard Units (S.U.)	TMECC 04.11-A	5.5–8.5
Soluble Salts Decisiemens per meter (dS/m)	TMECC 04.10-A	0-10.0
Moisture Content % wet weight	TMECC 03.09-A	0-60
Organic Matter Content % wet weight	TMECC 05.07-A	30–100
Maturity % relative to positive control	TMECC 05.05-A	80 or Above 80 or Above
Stability Milligrams of carbon dioxide-carbon per gram of Organic Matter (mg CO2-C/g OM per day)	TMECC 05.08-B	8 or below
Particle size for medium compost: dry weight Pass 2-inch sieve (min, %) Pass 1-inch sieve (max, %)	TMECC 02.02-B	 95 30

Table 3. Physical/Chemical Specifications of Compost Socks and Compost Berms (Continued)

Physical Property	Test Method	Requirement
Pathogen Fecal Coliform Bacteria MPN/1-gram dry weight	TMECC 07.01-B	< 1,000
Pathogen Salmonella MPN/4 grams dry weight	TMECC 07.01-B	< 3
Physical Contaminants (% dry weight) Plastics, glass, and metal	TMECC 02.02-C	Combined Total: < 0.5
Physical Contaminants (% dry weight) Sharps	TMECC 02.02-C	None Detected

*TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Composting Council (USCC).

Compost Socks

- Compost coarse parameter specifications for compost socks have been developed to assist in compost selection, such as those provided by the American Association of State Highway Transportation Officials (AASHTO).
- The Caltrans Erosion Control Toolbox: Compost Sock Standard Special Provision 21-2.02Q, states that natural fibers are preferred, do not use polypropylene mesh where wildlife may become entrapped.
- Typical Compost Moisture Content range for compost socks: 0% - 60%.
- Typical Organic Content range for compost socks: 30% - 100%.

Compost Berms

- Compost medium parameter specifications for compost berms have been developed to assist in compost selection, such as those provided by the American Association of State Highway Transportation Officials (AASHTO).
- A blend of fine and medium grade compost is recommended for compost berms intended for vegetation establishment.
- Typical Compost Moisture Content range for compost berms: 30% - 50%.
- Typical Organic Content range for compost berms: 30% - 65%.

Installation

Table 4 provides an overview of the installation of compost socks and compost berms.

Table 4: Installation of Compost Socks and Compost Berms

Implementation	Compost Socks	Compost Berms
Assess site access and terrain in selection of application method.	☑	☑
Prior to application, prepare location by removing brush and thick vegetation.	☑	☑
Allow compost or sock to come in full contact with the ground surface.	☑	☑
Do not trench into the soil.	☑	☑
Locate on level contours (i.e., perpendicular to sheet flow).	☑	☑
Slope inclination between 20:1 and 4:1 (H:V) Place BMP at a maximum interval of 35 ft.	☑	☑
Slope inclination of 4:1 (H:V) Place BMP at a maximum interval of 20 ft.	☑	☑
Slope inclination between 4:1 and 2:1 (H:V) Place at a maximum interval of 15 ft.	☑	
Slope inclination 2:1 (H:V) or greater: Place BMP at a maximum interval of 10 ft.	☑	
Place along perimeter using a j-hook installation.	☑	☑
Install around the perimeter of the disturbed area if the area is flat or on a contour.	☑	☑
If used at the toe of slopes, place at a minimum of 5 to 10 ft. away from the toe of the slope.	☑	☑
Use additional anchoring, such as stakes or vegetation, and erosion control BMPs in conjunction of the compost BMPs, as needed. Additional anchoring may be required on steeper slopes as per the manufacturer's specifications.	☑	☑
Can be effective over frozen ground if installed properly.	☑	☑
Can be effective over ground with cobbles if installed properly and the BMP is in contact with soil.	☑	☑
Do not expand drainage areas beyond 0.25 acre per 100 ft. placement interval and do not exceed runoff volume of 1 cubic foot per second.	☑	☑

Compost Socks

- A compost sock can be manufactured onsite with a pneumatic blower.
- Compost socks can be pre-manufactured and delivered to the site. Mesh socks can be tied at one end, filled, and then tied at the other end. The ends of socks can be interlocked until the desired length is achieved.
- The sock diameter is a function of slope steepness and length. ASSHTO provides specifications for various parameters. Compost socks range from 5 in. to 18 in. in diameter, while 5 in. to 8 in. in diameter are most common for slope interruption and 12 in. in diameter for sediment control.
- Compost socks can also be placed in a V formation as check dams. They need to be anchored, typically staked, through the center of the sock. To prevent water flowing around them, J-hook the ends of compost socks upslope.

Compost Berm

- Compost berms can be installed by hand; by using a construction equipment; or by using specialized equipment such as a pneumatic blower. A pneumatic blower truck is the most common way to apply a compost berm.

- The compost of the berm needs to be distributed evenly to the surface, compacted, and shaped trapezoidal in cross section. Berm design generally consists of a base that is twice the height. AASHTO specification MP 9-03 provides compost berm dimensions based on anticipated site precipitation (AASHTO, 2015 and EPA, 2021a). State agencies, such as Oregon Department of Transportation (ODOT), have developed berm dimension based on slope steepness and length (ODOT, 2020).

Inspection and Maintenance

- At a minimum, compost BMPs must be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Once damage is identified, mend or reapply the compost BMPs as needed. Repair washed out areas. If the compost sock or compost berm height is breached during a storm, a larger compost sock diameter may be used and similarly the compost berm dimensions can be increased, as applicable. An additional compost sock or compost berm may be installed upslope, as needed.

- Remove sediment contained by the compost sock or compost berm when it reaches 1/3 of the exposed height of the compost BMP.

- Exercise care to minimize the damage to protected areas while making repairs, as any area damaged will require reapplication of compost BMPs.

- Limit traffic over compost BMPs to minimize potential damage that may reduce BMP performance.

- Maintain anchors as needed.

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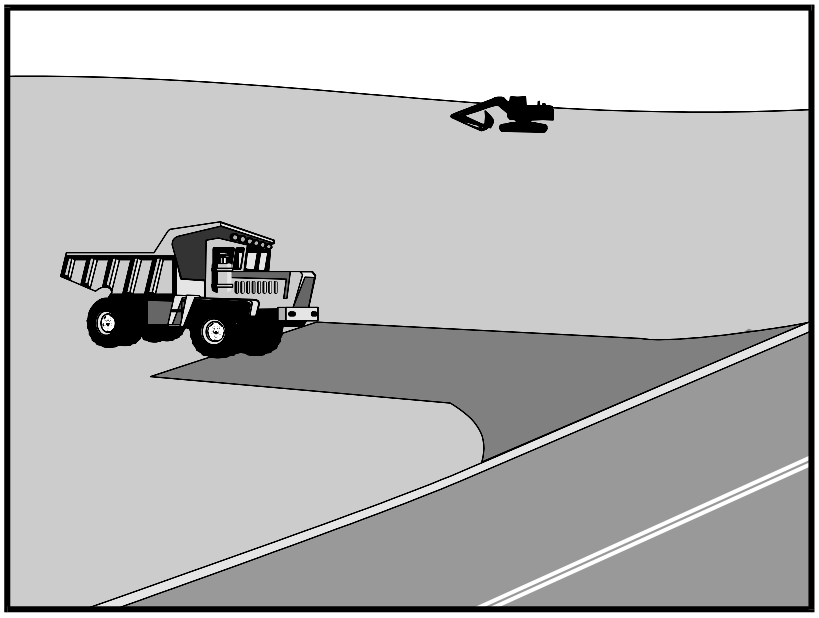
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Stabilized Construction Entrance/Exit TC-1



Categories

EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

Stabilized Construction Entrance/Exit TC-1

Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft or maximum site will allow, and 10 ft minimum width or to accommodate traffic.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.

- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

References and Additional Resources

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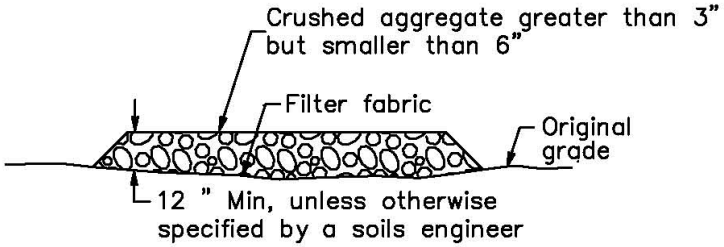
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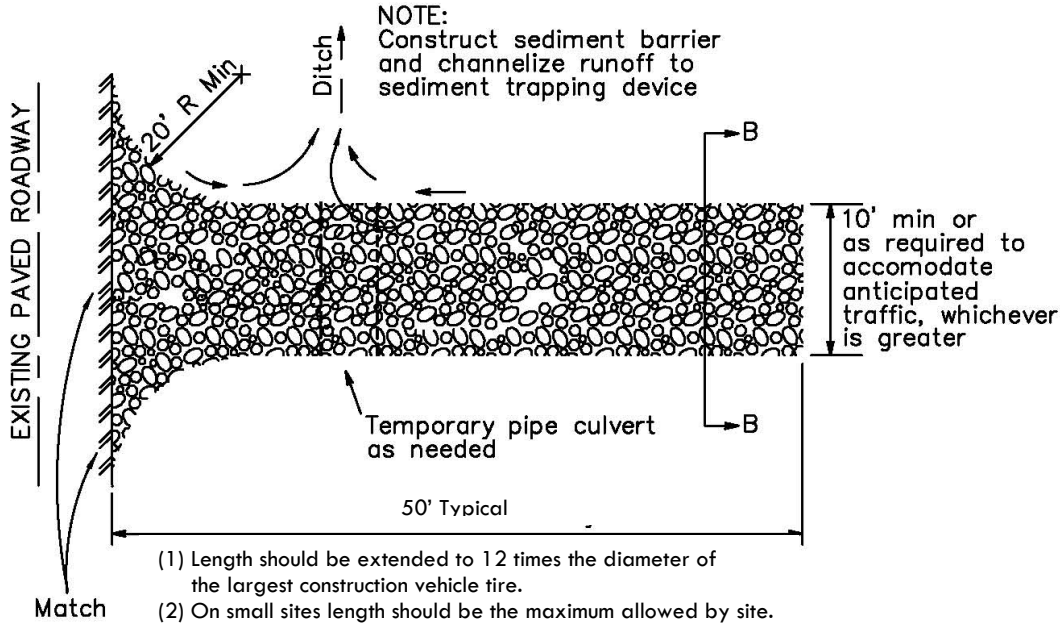
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Stabilized Construction Entrance/Exit TC-1

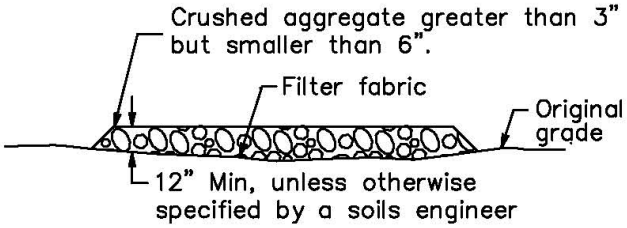


SECTION B–B
NTS

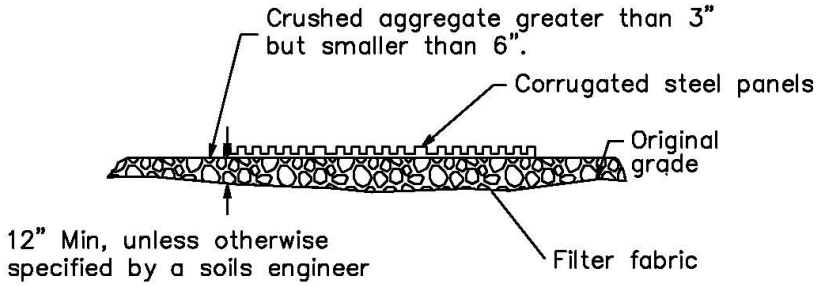


PLAN
NTS

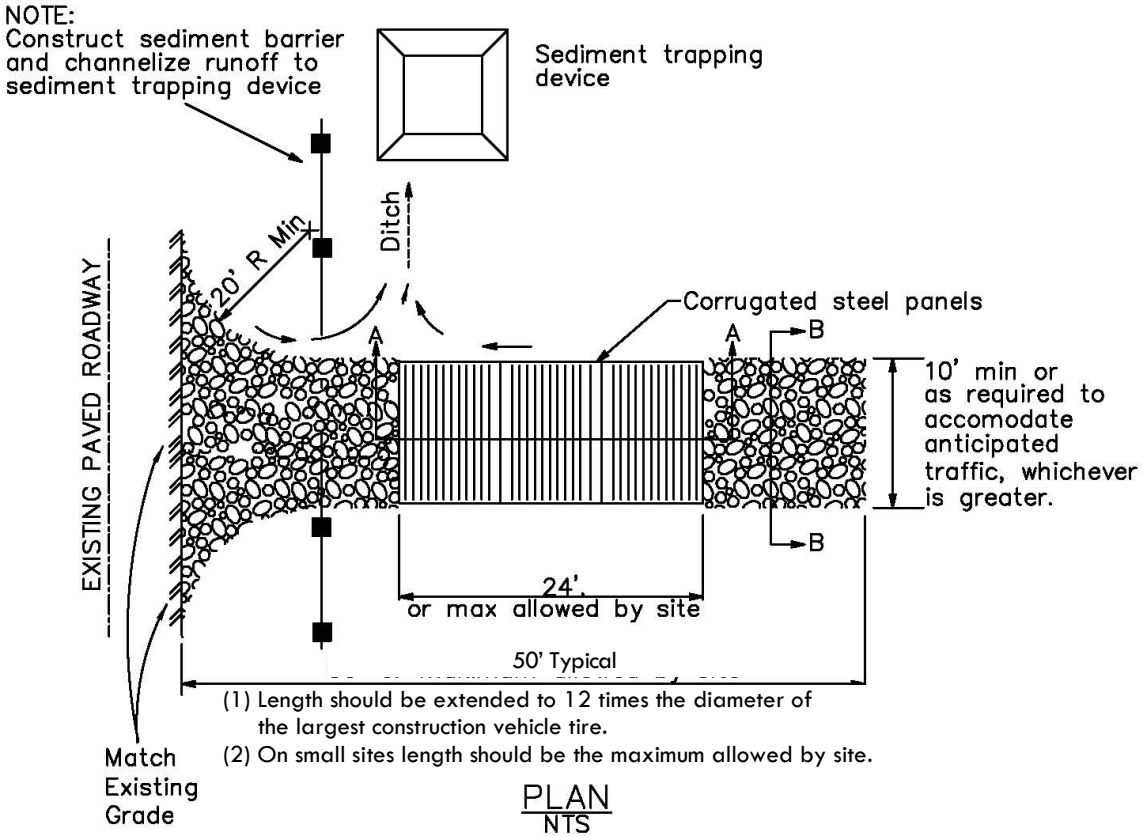
Stabilized Construction Entrance/Exit TC-1



SECTION B–B
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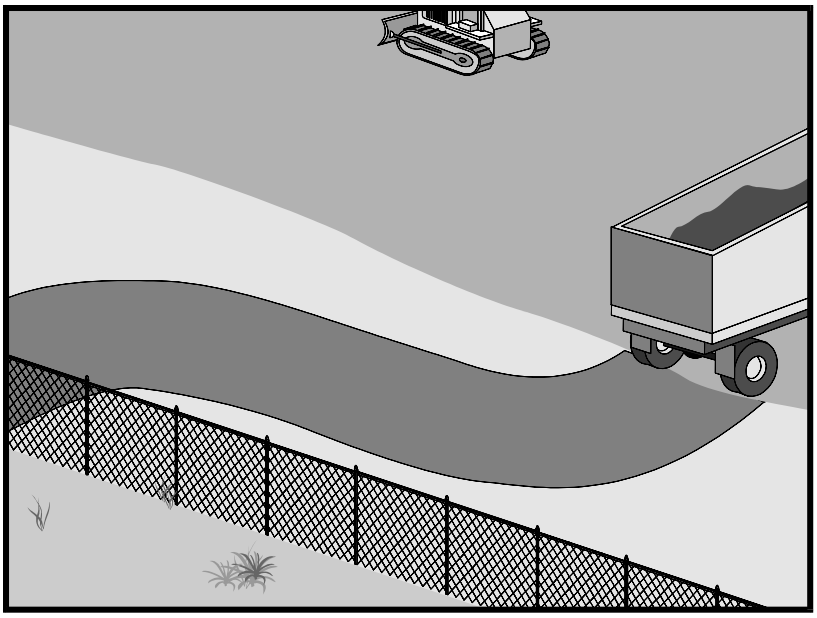


SECTION A–A
NOT TO SCALE



PLAN
NTS

Stabilized Construction Roadway TC-2



Categories

EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

Access roads, subdivision roads, parking areas, and other onsite vehicle transportation routes should be stabilized immediately after grading, and frequently maintained to prevent erosion and control dust.

Suitable Applications

This BMP should be applied for the following conditions:

- Temporary Construction Traffic:
  - Phased construction projects and offsite road access
  - Construction during wet weather
- Construction roadways and detour roads:
  - Where mud tracking is a problem during wet weather
  - Where dust is a problem during dry weather
  - Adjacent to water bodies
  - Where poor soils are encountered

Limitations

- The roadway must be removed or paved when construction is complete.
- Certain chemical stabilization methods may cause stormwater or soil pollution and should not be used. See WE-1, Wind Erosion Control.

- Management of construction traffic is subject to air quality control measures. Contact the local air quality management agency.
- Materials will likely need to be removed prior to final project grading and stabilization.
- Use of this BMP may not be applicable to very short duration projects.

Implementation

General

Areas that are graded for construction vehicle transport and parking purposes are especially susceptible to erosion and dust. The exposed soil surface is continually disturbed, leaving no opportunity for vegetative stabilization. Such areas also tend to collect and transport runoff waters along their surfaces. During wet weather, they often become muddy quagmires that generate significant quantities of sediment that may pollute nearby streams or be transported offsite on the wheels of construction vehicles. Dirt roads can become so unstable during wet weather that they are virtually unusable.

Efficient construction road stabilization not only reduces onsite erosion but also can significantly speed onsite work, avoid instances of immobilized machinery and delivery vehicles, and generally improve site efficiency and working conditions during adverse weather

Installation/Application Criteria

Permanent roads and parking areas should be paved as soon as possible after grading. As an alternative where construction will be phased, the early application of gravel or chemical stabilization may solve potential erosion and stability problems. Temporary gravel roadway should be considered during the rainy season and on slopes greater than 5%.

Temporary roads should follow the contour of the natural terrain to the maximum extent possible. Slope should not exceed 15%. Roadways should be carefully graded to drain transversely. Provide drainage swales on each side of the roadway in the case of a crowned section or one side in the case of a super elevated section. Simple gravel berms without a trench can also be used.

Installed inlets should be protected to prevent sediment laden water from entering the storm sewer system (SE-10, Storm Drain Inlet Protection). In addition, the following criteria should be considered.

- Road should follow topographic contours to reduce erosion of the roadway.
- The roadway slope should not exceed 15%.
- Chemical stabilizers or water are usually required on gravel or dirt roads to prevent dust (WE-1, Wind Erosion Control).
- Properly grade roadway to prevent runoff from leaving the construction site.
- Design stabilized access to support heaviest vehicles and equipment that will use it.
- Coordinate materials with those used for stabilized construction entrance/exit points.

- Stabilize roadway using aggregate, asphalt concrete, or concrete based on longevity, required performance, and site conditions. The use of cold mix asphalt or asphalt concrete (AC) grindings for stabilized construction roadway is not allowed.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep all temporary roadway ditches clear.
- When no longer required, remove stabilized construction roadway and re-grade and repair slopes.
- Periodically apply additional aggregate on gravel roads.
- Active dirt construction roads are commonly watered three or more times per day during the dry season.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

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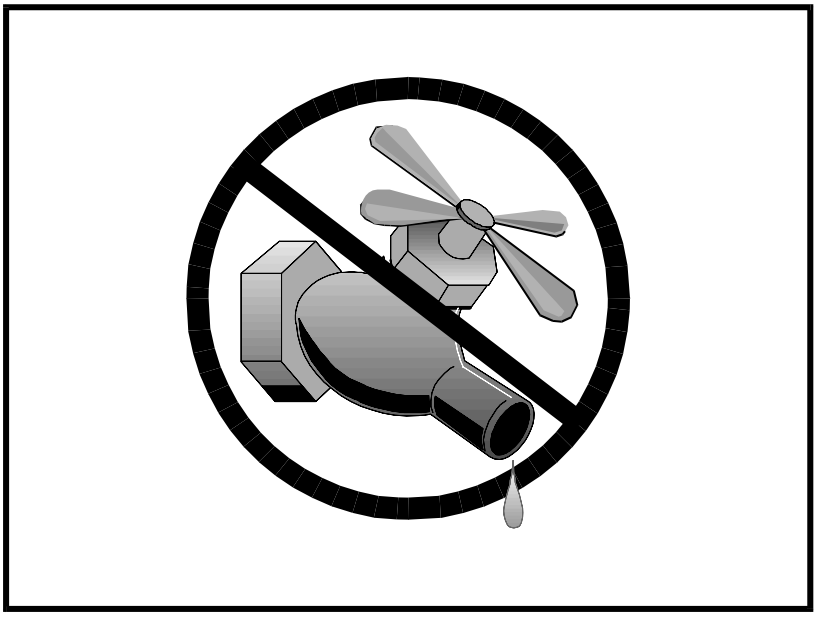
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Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Water Conservation Practices NS-1



Categories

EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.

- Direct construction water runoff to areas where it can soak into the ground or be collected and used.
- Authorized non-stormwater discharges to the storm drain system, channels, or receiving waters are acceptable with the implementation of appropriate BMPs.
- Lock water tank valves to prevent unauthorized use.

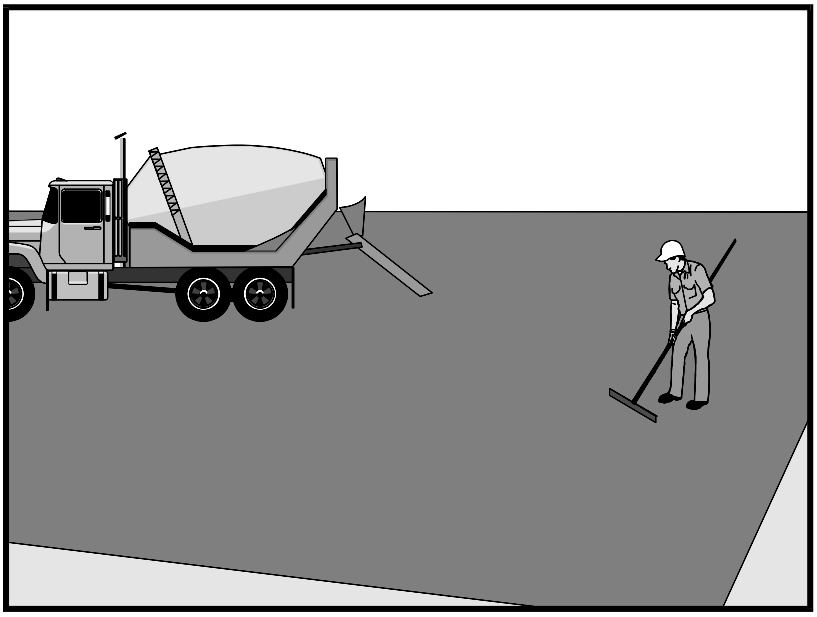
Inspection and Maintenance

- Inspect and verify that activity based BMPs are in place prior to the commencement of authorized non-stormwater discharges.
- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges are occuring.
- Repair water equipment as needed to prevent unintended discharges.
  - Water trucks
  - Water reservoirs (water buffalos)
  - Irrigation systems
  - Hydrant connections

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Paving and Grinding Operations NS-3



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☒

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

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Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

The General Permit incorporates Numeric Action Levels (NAL) for pH and turbidity (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials associated with paving and grinding operations, including mortar, concrete, and cement and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

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Limitations

- Paving opportunities may be limited during wet weather.
- Discharges of freshly paved surfaces may raise pH to environmentally harmful levels and trigger permit violations.

Implementation

General

- Avoid paving during the wet season when feasible.
- Reschedule paving and grinding activities if rain is forecasted.
- Train employees and sub-contractors in pollution prevention and reduction.
- Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage).
- Protect drainage courses, particularly in areas with a grade, by employing BMPs to divert runoff or to trap and filter sediment.
- Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses. These materials should be stored consistent with WM-3, Stockpile Management.
- Disposal of PCC (Portland cement concrete) and AC (asphalt concrete) waste should be in conformance with WM-8, Concrete Waste Management.

Saw Cutting, Grinding, and Pavement Removal

- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- When paving involves AC, the following steps should be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials:
    - AC grindings, pieces, or chunks used in embankments or shoulder backing should not be allowed to enter any storm drains or watercourses. Install inlet protection and perimeter controls until area is stabilized (i.e. cutting, grinding or other removal activities are complete and loose material has been properly removed and disposed of)or permanent controls are in place. Examples of temporary perimeter controls can be found in EC-9, Earth Dikes and Drainage Swales; SE-1, Silt Fence; SE-5, Fiber Rolls, or SE-13 Compost Socks and Berms
    - Collect and remove all broken asphalt and recycle when practical. Old or spilled asphalt should be recycled or disposed of properly.
- Do not allow saw-cut slurry to enter storm drains or watercourses. Residue from grinding operations should be picked up by a vacuum attachment to the grinding machine, or by sweeping, should not be allowed to flow across the pavement, and should not be left on the

surface of the pavement. See also WM-8, Concrete Waste Management, and WM-10, Liquid Waste Management.

- Pavement removal activities should not be conducted in the rain.
- Collect removed pavement material by mechanical or manual methods. This material may be recycled for use as shoulder backing or base material.
- If removed pavement material cannot be recycled, transport the material back to an approved storage site.

Asphaltic Concrete Paving

- If paving involves asphaltic cement concrete, follow these steps:
  - Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks. Vacuum or sweep loose sand and gravel and properly dispose of this waste by referring to WM-5, Solid Waste Management.
  - Old asphalt should be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.

Portland Cement Concrete Paving

- Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect waste materials by dry methods, such as sweeping or shoveling, and return to aggregate base stockpile or dispose of properly. Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, Concrete Waste Management, or pump the water to the sanitary sewer if authorized by the local wastewater authority.

Sealing Operations

- During chip seal application and sweeping operations, petroleum or petroleum covered aggregate should not be allowed to enter any storm drain or water courses. Apply temporary perimeter controls until structure is stabilized (i.e. all sealing operations are complete and cured and loose materials have been properly removed and disposed).
- Inlet protection (SE-10, Storm Drain Inlet Protection) should be used during application of seal coat, tack coat, slurry seal, and fog seal.
- Seal coat, tack coat, slurry seal, or fog seal should not be applied if rainfall is predicted to occur during the application or curing period.

Paving Equipment

- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use. Clean up spills with absorbent materials and dispose of in accordance with the applicable regulations. See NS-10, Vehicle and Equipment Maintenance, WM-4, Spill Prevention and Control, and WM-10, Liquid Waste Management.
- Substances used to coat asphalt transport trucks and asphalt spreading equipment should not contain soap and should be non-foaming and non-toxic.

- Paving equipment parked onsite should be parked over plastic to prevent soil contamination.

- Clean asphalt coated equipment offsite whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in WM-5, Solid Waste Management. Any cleaning onsite should follow NS-8, Vehicle and Equipment Cleaning.

Thermoplastic Striping

- Thermoplastic striper and pre-heater equipment shutoff valves should be inspected to ensure that they are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.

- Pre-heaters should be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move.

- Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.

- Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material.

Raised/Recessed Pavement Marker Application and Removal

- Do not transfer or load bituminous material near drain inlets, the stormwater drainage system, or watercourses.

- Melting tanks should be loaded with care and not filled to beyond six inches from the top to leave room for splashing.

- When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.

- On large-scale projects, use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of paving and grinding operations.

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Sample stormwater runoff required by the General Permit.

- Keep ample supplies of drip pans or absorbent materials onsite.

- Inspect and maintain machinery regularly to minimize leaks and drips.

References and Additional Resources

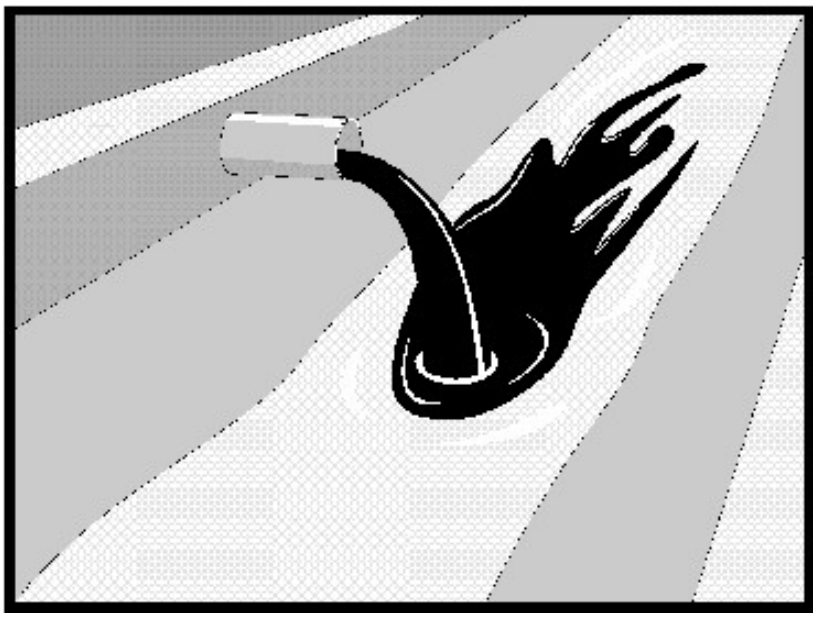
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Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Hot Mix Asphalt-Paving Handbook AC 150/5370-14, Appendix I, U.S. Army Corps of Engineers, July 1991.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Illicit Connection/Discharge NS-6



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials on a construction site and report incidents.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Illicit connection/discharge and reporting is applicable anytime an illicit connection or discharge is discovered, or illegally dumped material is found on the construction site.

Limitations

Illicit connections and illegal discharges or dumping, for the purposes of this BMP, refer to discharges and dumping caused by parties other than the contractor. If pre-existing hazardous materials or wastes are known to exist onsite, they should be identified in the SWPPP and handled as set forth in the SWPPP.

Implementation

Planning

- Review the SWPPP. Pre-existing areas of contamination should be identified and documented in the SWPPP.
- Inspect site before beginning the job for evidence of illicit connections, illegal dumping or discharges. Document any pre-existing conditions and notify the owner.

- Inspect site regularly during project execution for evidence of illicit connections, illegal dumping or discharges.
- Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification of Illicit Connections and Illegal Dumping or Discharges

- **General –** unlabeled and unidentifiable material should be treated as hazardous.
- **Solids** - Look for debris, or rubbish piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.
- **Liquids** - signs of illegal liquid dumping or discharge can include:
  - Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Abnormal water flow during the dry weather season
- **Urban Areas** - Evidence of illicit connections or illegal discharges is typically detected at storm drain outfall locations or at manholes. Signs of an illicit connection or illegal discharge can include:
  - Abnormal water flow during the dry weather season
  - Unusual flows in sub drain systems used for dewatering
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Excessive sediment deposits, particularly adjacent to or near active offsite construction projects
- **Rural Areas** - Illicit connections or illegal discharges involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit discharge can include:
  - Abnormal water flow during the non-irrigation season
  - Non-standard junction structures
  - Broken concrete or other disturbances at or near junction structures

Reporting

Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery. For illicit connections or discharges to the storm drain system, notify the local stormwater management agency. For illegal dumping, notify the local law enforcement agency.

Cleanup and Removal

The responsibility for cleanup and removal of illicit or illegal dumping or discharges will vary by location. Contact the local stormwater management agency for further information.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect the site regularly to check for any illegal dumping or discharge.
- Prohibit employees and subcontractors from disposing of non-job-related debris or materials at the construction site.
- Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery.

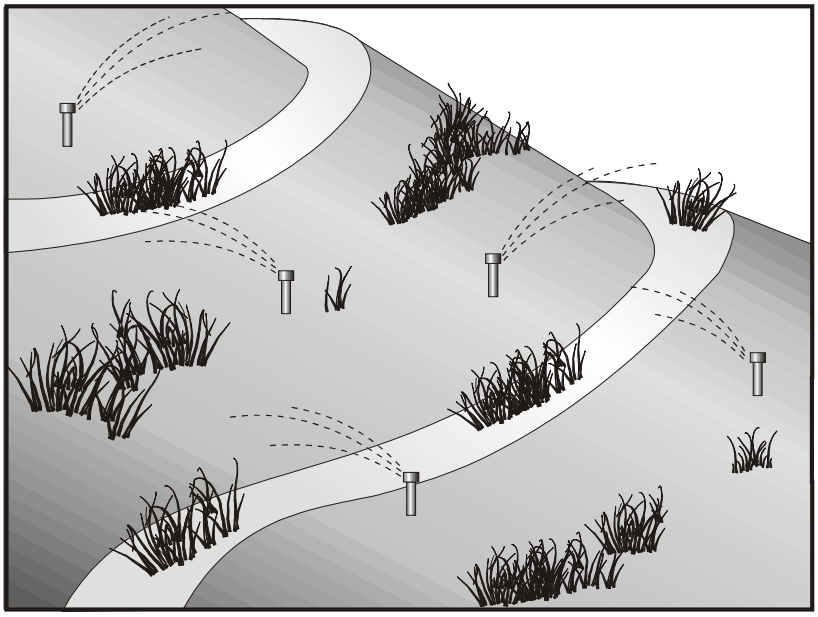
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Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Potable Water/Irrigation NS-7



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Potable Water/Irrigation consists of practices and procedures to manage the discharge of potential pollutants generated during discharges from irrigation water lines, landscape irrigation, lawn or garden watering, planned and unplanned discharges from potable water sources, water line flushing, and hydrant flushing.

Suitable Applications

Implement this BMP whenever potable water or irrigation water discharges occur at or enter a construction site.

Limitations

None identified.

Implementation

- Direct water from offsite sources around or through a construction site, where feasible, in a way that minimizes contact with the construction site.
- Discharges from water line flushing should be reused for landscaping purposes where feasible.
- Shut off the water source to broken lines, sprinklers, or valves as soon as possible to prevent excess water flow.
- Protect downstream stormwater drainage systems and watercourses from water pumped or bailed from trenches excavated to repair water lines.

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- Inspect irrigated areas within the construction limits for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used and to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Repair broken water lines as soon as possible.
- Inspect irrigated areas regularly for signs of erosion and/or discharge.

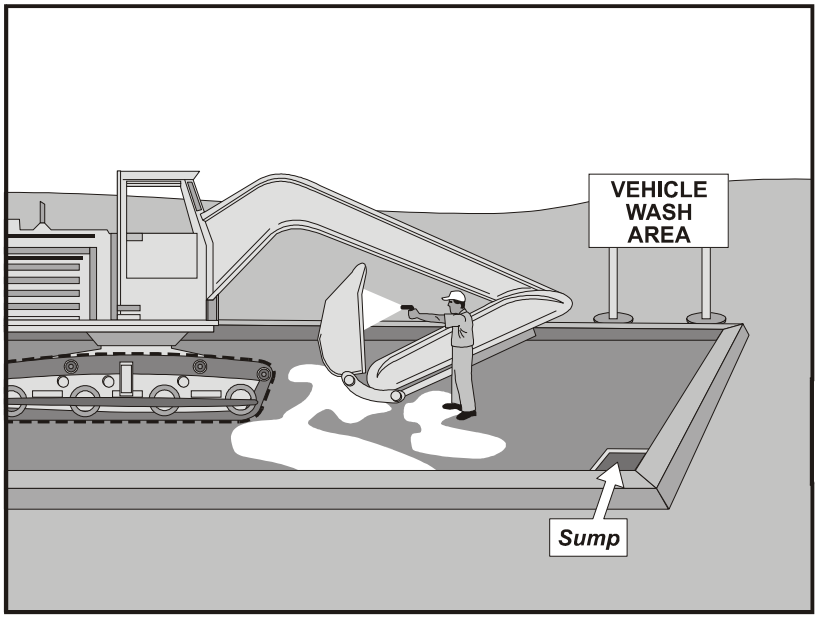
References and Additional Resources

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Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle and Equipment Cleaning NS-8



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. Procedures and practices include but are not limited to: using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment cleaning is performed.

Limitations

Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

Implementation

Other options to washing equipment onsite include contracting with either an offsite or mobile commercial washing business. These businesses may be better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

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If washing operations are to take place onsite, then:

- Use phosphate-free, biodegradable soaps.
- Educate employees and subcontractors on pollution prevention measures.
- Do not permit steam cleaning onsite. Steam cleaning can generate significant pollutant concentrates.
- Cleaning of vehicles and equipment with soap, solvents or steam should not occur on the project site unless resulting wastes are fully contained and disposed of. Resulting wastes should not be discharged or buried and must be captured and recycled or disposed according to the requirements of WM-10, Liquid Waste Management or WM-6, Hazardous Waste Management, depending on the waste characteristics. Minimize use of solvents. Use of diesel for vehicle and equipment cleaning is prohibited.
- All vehicles and equipment that regularly enter and leave the construction site must be cleaned offsite.
- When vehicle and equipment washing and cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area should have the following characteristics:
  - Located away from storm drain inlets, drainage facilities, or watercourses
  - Paved with concrete or asphalt and bermed to contain wash waters and to prevent runon and runoff
  - Configured with a sump to allow collection and disposal of wash water
  - No discharge of wash waters to storm drains or watercourses
  - Used only when necessary
- When cleaning vehicles and equipment with water:
  - Use as little water as possible. High-pressure sprayers may use less water than a hose and should be considered
  - Use positive shutoff valve to minimize water usage
  - Facility wash racks should discharge to a sanitary sewer, recycle system or other approved discharge system and must not discharge to the storm drainage system, watercourses, or to groundwater

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

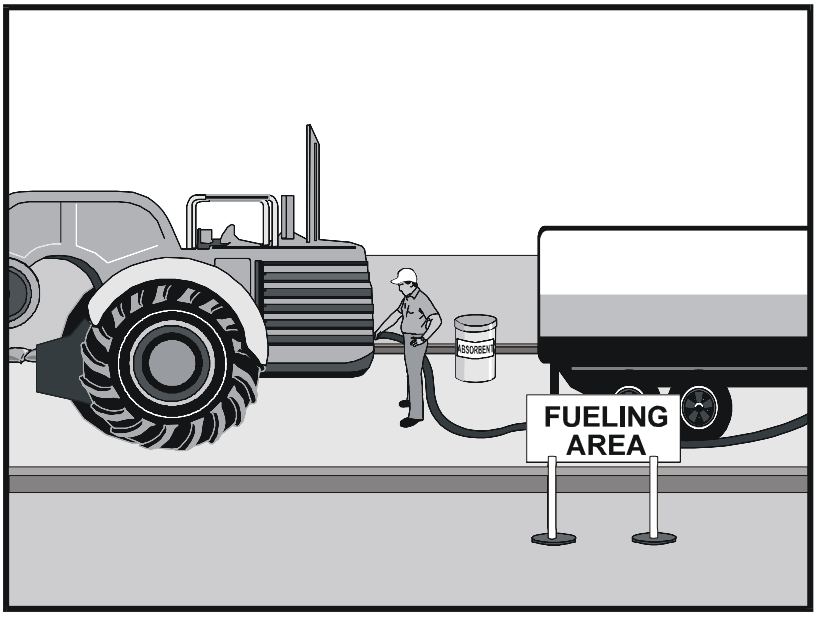
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspection and maintenance are minimal, although some berm repair may be necessary.
- Monitor employees and subcontractors throughout the duration of the construction project to ensure appropriate practices are being implemented.
- Inspect sump regularly and remove liquids and sediment as needed.
- Prohibit employees and subcontractors from washing personal vehicles and equipment on the construction site.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Swisher, R.D. Surfactant Biodegradation, Marcel Decker Corporation, 1987.

Vehicle and Equipment Fueling NS-9



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

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Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/ Exit.

Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.

- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks and should be disposed of properly after use.
- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SWPPP.
- Dedicated fueling areas should be protected from stormwater runon and runoff and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Inspection and Maintenance

- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately, or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

References and Additional Resources

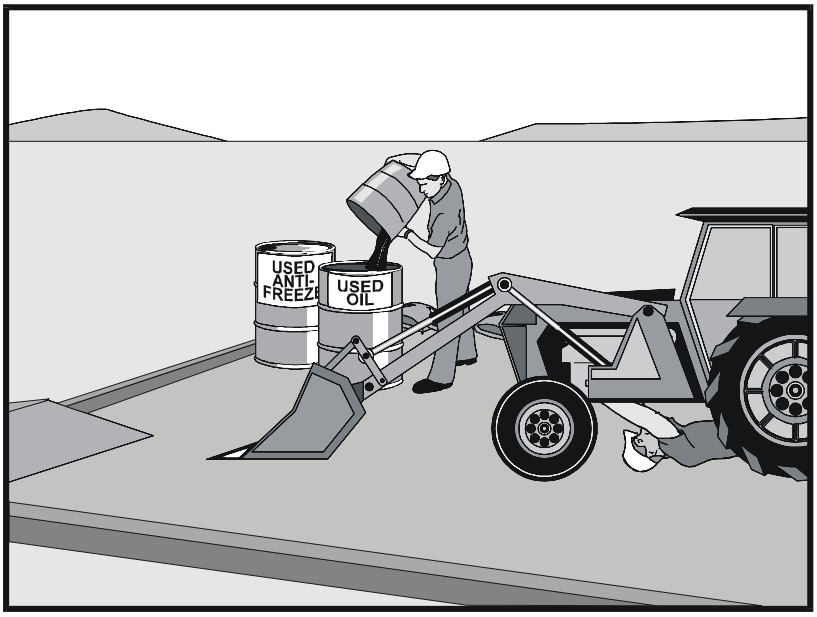
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Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle & Equipment Maintenance NS-10



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TC-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8,

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Vehicle and Equipment Cleaning, and NS-9, Vehicle and Equipment Fueling.

Implementation

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff and should be located at least 50 ft from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.

- Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Safer Alternative Products

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an "environmentally friendly" label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.
- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Recycling and Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like,-trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs

in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately, or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

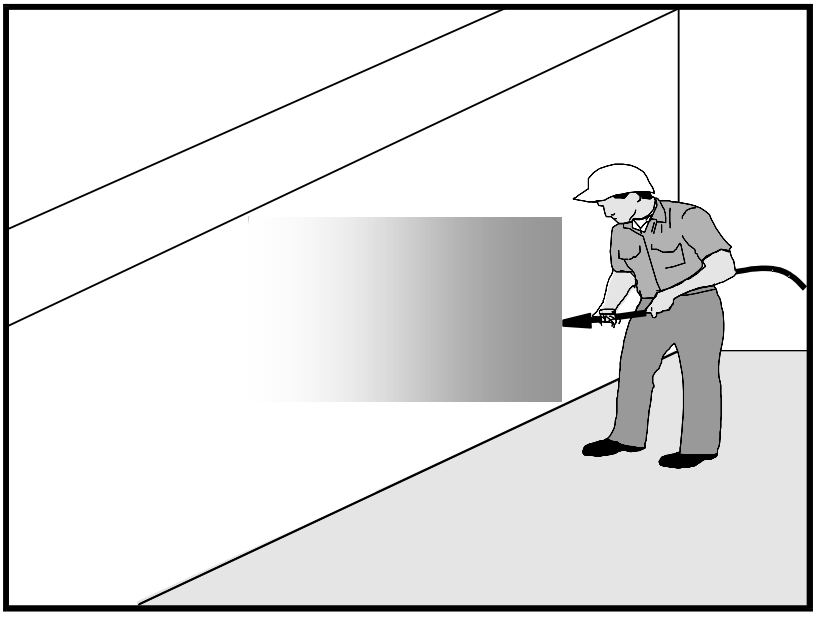
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Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Concrete Curing NS-12



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

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Description and Purpose

Concrete curing is used in the construction of structures such as bridges, retaining walls, pump houses, large slabs, and structured foundations. Concrete curing includes the use of both chemical and water methods.

Concrete and its associated curing materials have basic chemical properties that can raise the pH of water to levels outside of the permitted range. Discharges of stormwater and non-stormwater exposed to concrete during curing may have a high pH and may contain chemicals, metals, and fines. The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Proper procedures and care should be taken when managing concrete curing materials to prevent them from coming into contact with stormwater flows, which could result in a high pH discharge.

Suitable Applications

Suitable applications include all projects where Portland Cement Concrete (PCC) and concrete curing chemicals are placed where they can be exposed to rainfall, runoff from other areas, or where runoff from the PCC will leave the site.

Limitations

- Runoff contact with concrete waste can raise pH levels in the water to environmentally harmful levels and trigger permit violations.

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Implementation

Chemical Curing

- Avoid over spray of curing compounds.
- Minimize the drift by applying the curing compound close to the concrete surface. Apply an amount of compound that covers the surface but does not allow any runoff of the compound.
- Use proper storage and handling techniques for concrete curing compounds. Refer to WM-1, Material Delivery and Storage.
- Protect drain inlets prior to the application of curing compounds.
- Refer to WM-4, Spill Prevention and Control.

Water Curing for Bridge Decks, Retaining Walls, and other Structures

- Direct cure water away from inlets and watercourses to collection areas for evaporation or other means of removal in accordance with all applicable permits. See WM-8 Concrete Waste Management.
- Collect cure water at the top of slopes and transport to a concrete waste management area in a non-erosive manner. See EC-9 Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.
- Utilize wet blankets or a similar method that maintains moisture while minimizing the use and possible discharge of water.

Education

- Educate employees, subcontractors, and suppliers on proper concrete curing techniques to prevent contact with discharge as described herein.
- Arrange for the QSP or the appropriately trained contractor's superintendent or representative to oversee and enforce concrete curing procedures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Sample non-stormwater discharges and stormwater runoff that contacts uncured and partially cured concrete as required by the General Permit.

- Ensure that employees and subcontractors implement appropriate measures for storage, handling, and use of curing compounds.
- Inspect cure containers and spraying equipment for leaks.

References and Additional Resources

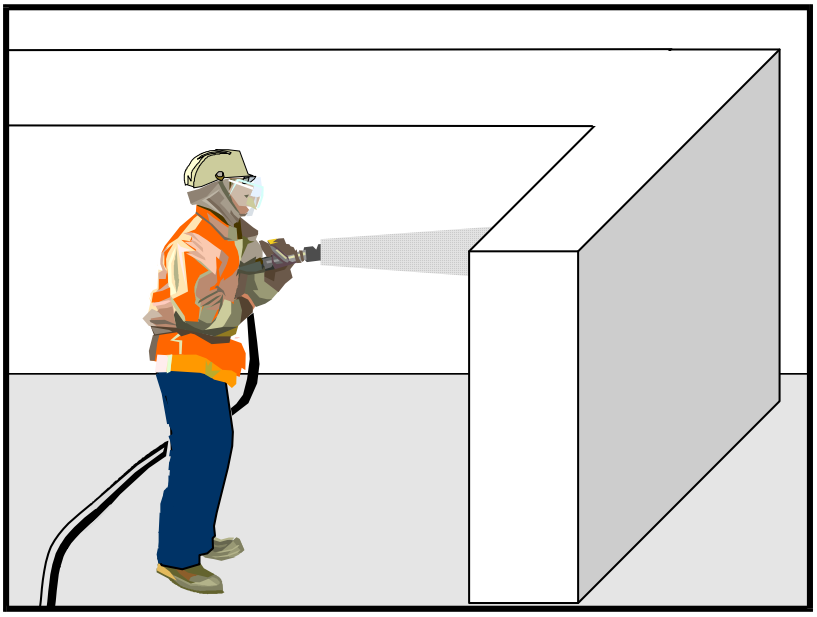
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Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

Concrete Finishing NS-13



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

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Description and Purpose

Concrete finishing methods are used for bridge deck rehabilitation, paint removal, curing compound removal, and final surface finish appearances. Methods include sand blasting, shot blasting, grinding, or high-pressure water blasting. Stormwater and non-stormwater exposed to concrete finishing by-products may have a high pH and may contain chemicals, metals, and fines. Proper procedures and implementation of appropriate BMPs can minimize the impact that concrete-finishing methods may have on stormwater and non-stormwater discharges.

The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Concrete and its associated curing materials have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows, which could lead to exceedances of the General Permit requirements.

Suitable Applications

These procedures apply to all construction locations where concrete finishing operations are performed.

Limitations

- Runoff contact with concrete waste can raise pH levels in the water to environmentally harmful levels and trigger permit violations.

Implementation

- Collect and properly dispose of water from high-pressure water blasting operations.
- Collect contaminated water from blasting operations at the top of slopes. Transport or dispose of contaminated water while using BMPs such as those for erosion control. Refer to EC-9, Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.
- Direct water from blasting operations away from inlets and watercourses to collection areas for infiltration or other means of removal (dewatering). Refer to NS-2 Dewatering Operations.
- Protect inlets during sandblasting operations. Refer to SE-10, Storm Drain Inlet Protection.
- Refer to WM-8, Concrete Waste Management for disposal of concrete debris.
- Minimize the drift of dust and blast material as much as possible by keeping the blasting nozzle close to the surface.
- When blast residue contains a potentially hazardous waste, refer to WM-6, Hazardous Waste Management.

Education

- Educate employees, subcontractors, and suppliers on proper concrete finishing techniques to prevent contact with discharge as described herein.
- Arrange for the QSP or the appropriately trained contractor's superintendent or representative to oversee and enforce concrete finishing procedures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Sample non-stormwater discharges and stormwater runoff that contacts concrete dust and debris as required by the General Permit.
- Sweep or vacuum up debris from sandblasting at the end of each shift.

- At the end of each work shift, remove and contain liquid and solid waste from containment structures, if any, and from the general work area.
- Inspect containment structures for damage prior to use and prior to onset of forecasted rain.

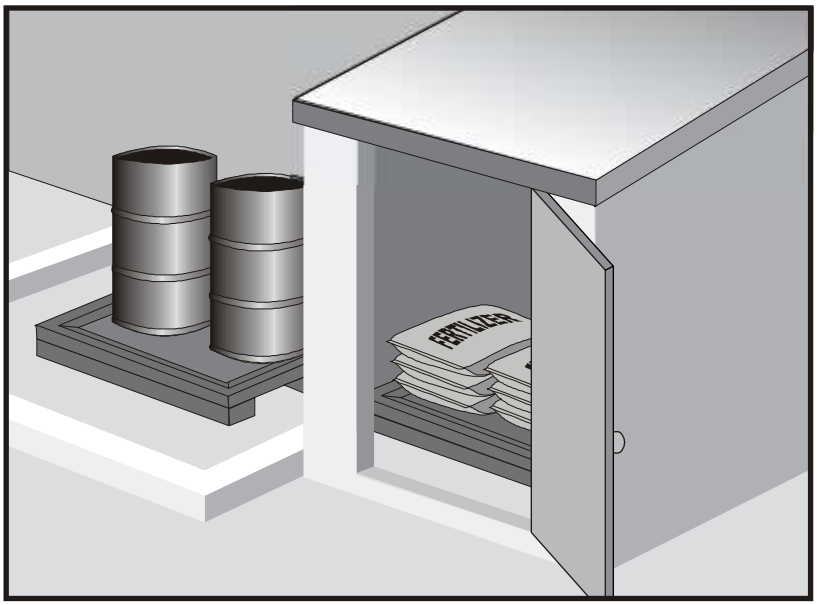
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Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Material Delivery and Storage WM-1



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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- Asphalt and concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Chemicals must be stored in water tight containers with appropriate secondary containment or in a storage shed.
- When a material storage area is located on bare soil, the area should be lined and bermed.
- Use containment pallets or other practical and available solutions, such as storing materials within newly constructed buildings or garages, to meet material storage requirements.
- Stack erodible landscape material on pallets and cover when not in use.
- Contain all fertilizers and other landscape materials when not in use.
- Temporary storage areas should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be available on-site for all materials stored that have the potential to effect water quality.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located away from waterways, if possible.
    - Avoid transport near drainage paths or waterways.
    - Surround with earth berms or other appropriate containment BMP. See EC-9, Earth Dikes and Drainage Swales.
    - Place in an area that will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.

- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- Keep ample spill cleanup supplies appropriate for the materials being stored. Ensure that cleanup supplies are in a conspicuous, labeled area.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove and dispose of materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25-year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Materials should be covered prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or completely enclosed storage sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous wastes.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.
- If spills or leaks of materials occur that are not contained and could discharge to surface waters, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep storage areas clean and well organized, including a current list of all materials onsite.
- Inspect labels on containers for legibility and accuracy.
- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References and Additional Resources

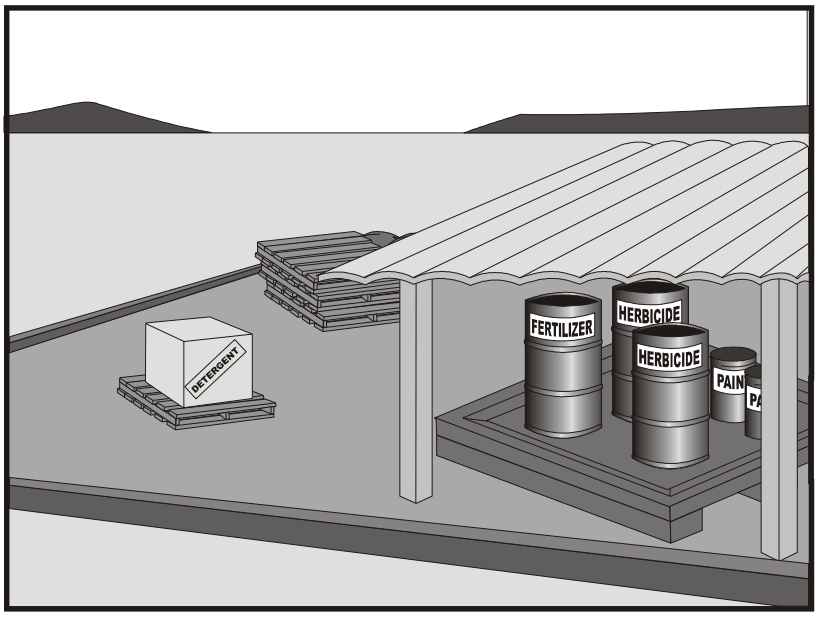
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Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Material Use WM-2



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Other materials that may be detrimental if released to the environment

Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Implementation

The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train personnel who use pesticides. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct onsite inspections.
- The preferred method of termiticide application is soil injection near the existing or proposed structure foundation/slab; however, if not feasible, soil drench application of termiticides should follow EPA label guidelines and the following recommendations (most of which are applicable to most pesticide applications):
  - Do not treat soil that is water-saturated or frozen.
  - Application shall not commence within 24-hours of a predicted precipitation event with a 40% or greater probability. Weather tracking must be performed on a daily basis prior to termiticide application and during the period of termiticide application.
  - Do not allow treatment chemicals to runoff from the target area. Apply proper quantity to prevent excess runoff. Provide containment for and divert stormwater from application areas using berms or diversion ditches during application.
  - Dry season: Do not apply within 10 feet of storm drains. Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds).
  - Wet season: Do not apply within 50 feet of storm drains or aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds) unless a vegetative buffer is present (if so, refer to dry season requirements).
  - Do not make on-grade applications when sustained wind speeds are above 10 mph (at application site) at nozzle end height.
  - Cover treatment site prior to a rain event in order to prevent run-off of the pesticide into non-target areas. The treated area should be limited to a size that can be backfilled and/or covered by the end of the work shift. Backfilling or covering of the treated area shall be done by the end of the same work shift in which the application is made.
  - The applicator must either cover the soil him/herself or provide written notification of the above requirement to the contractor on site and to the person commissioning the application (if different than the contractor). If notice is provided to the contractor or the person commissioning the application, then they are responsible under the Federal Insecticide Fungicide, and Rodenticide Act (FIFRA) to ensure that: 1) if the concrete slab cannot be poured over the treated soil within 24 hours of application, the treated soil is

covered with a waterproof covering (such as polyethylene sheeting), and 2) the treated soil is covered if precipitation is predicted to occur before the concrete slab is scheduled to be poured.

- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydraulic application. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals before predicted rainfall.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted or contain for proper disposal off site. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.
- Document the location, time, chemicals applied, and applicator's name and qualifications.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.
- Discontinue use of erodible landscape material within 2 days prior to a forecasted rain event and materials should be covered and/or bermed.
- Provide containment for material use areas such as masons' areas or paint mixing/preparation areas to prevent materials/pollutants from entering stormwater.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Ensure employees and subcontractors throughout the job are using appropriate practices.

References and Additional Resources

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

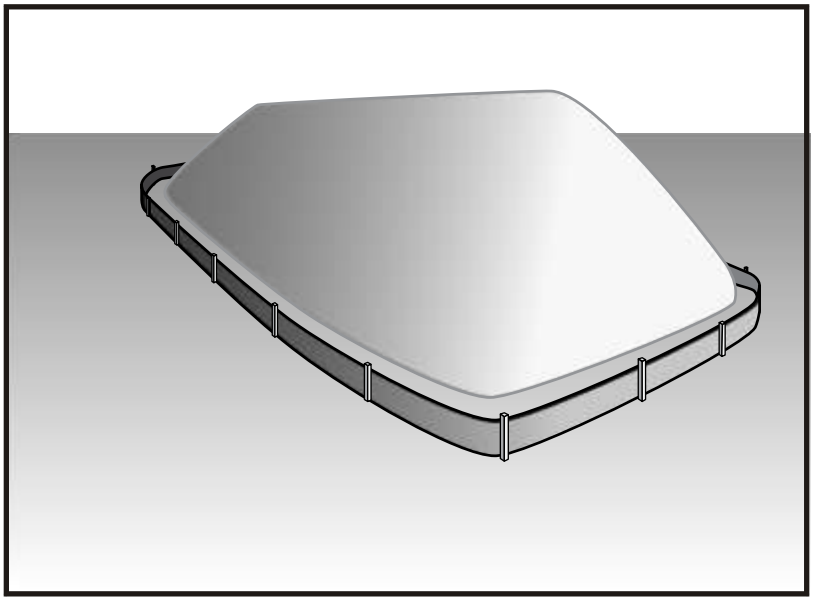
Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Comments on Risk Assessments Risk Reduction Options for Cypermethrin: Docket No. OPP–2005–0293; California Stormwater Quality Association (CASQA) letter to USEPA, 2006.Environmental Hazard and General Labeling for Pyrethroid Non-Agricultural Outdoor Products, EPA-HQ-OPP-2008-0331-0021; USEPA, 2008.

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3



Treat Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other loose materials.

Limitations

- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of Plastic materials and photodegradable plastics should be avoided.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

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- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- After 14 days of inactivity, a stockpile is non-active and requires further protection described below. All stockpiles are required to be protected as non-active stockpiles immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater run-on using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles

A stockpile is considered non-active if it either is not used for 14 days or if it is scheduled not to be used for 14 days or more. Stockpiles need to be protected immediately if they are not scheduled to be used within 14 days. Non-active stockpiles of the identified materials should be protected as follows:

Soil stockpiles

- Soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Temporary vegetation should be considered for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- Stockpiles should be covered and protected with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"

- Cold mix stockpiles should be placed on and covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Stockpiles of fly ash, stucco, hydrated lime

- Stockpiles of materials that may raise the pH of runoff (i.e., basic materials) should be covered with plastic and surrounded by a berm.

Stockpiles/Storage of treated wood

- Treated wood should be covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Protection of Active Stockpiles

A stockpile is active when it is being used or is scheduled to be used within 14 days of the previous use. Active stockpiles of the identified materials should be protected as follows:

- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

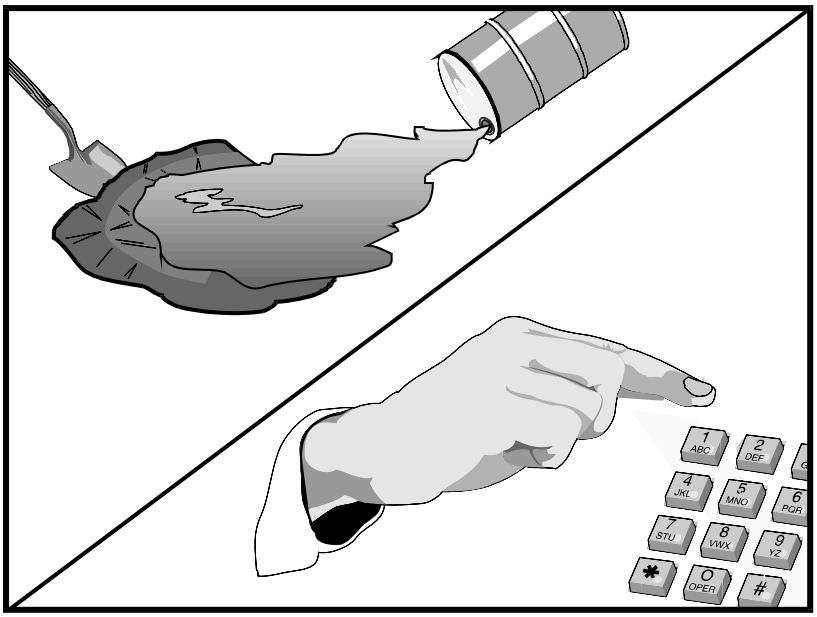
Inspection and Maintenance

- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Spill Prevention and Control WM-4



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

- Fuels
- Lubricants
- Other petroleum distillates

Limitations

- In some cases, it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

Implementation

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill.
  - Recover spilled materials.
  - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

- Spills should be cleaned up immediately:
  - Contain spread of the spill.
  - Notify the project foreman immediately.
  - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
  - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
  - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
  - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
  - Notification should first be made by telephone and followed up with a written report.
  - The services of a spill's contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
  - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

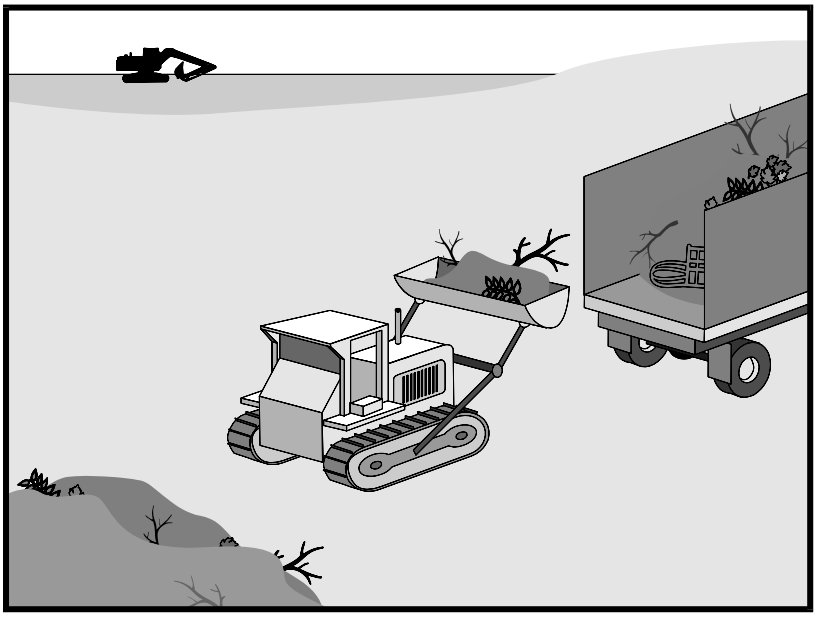
References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Solid Waste Management WM-5



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for construction sites where the following wastes are generated or stored:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction
- Packaging materials including wood, paper, and plastic
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces, and masonry products
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes
- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials

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- Highway planting wastes, including vegetative material, plant containers, and packaging materials

Limitations

Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Implementation

The following steps will help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Cover waste containers at the end of each work day and when it is raining.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Education

- Have the contractor's superintendent or representative oversee and enforce proper solid waste management procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.

- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Minimize production of solid waste materials wherever possible.

Collection, Storage, and Disposal

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stacked in an orderly manner.
- Stormwater runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas should be located at least 50 ft from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters should be securely covered from wind and rain by covering the waste with tarps or plastic.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

- For disposal of hazardous waste, see WM-6, Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.
- Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur
- Inspect construction waste area regularly.
- Arrange for regular waste collection.

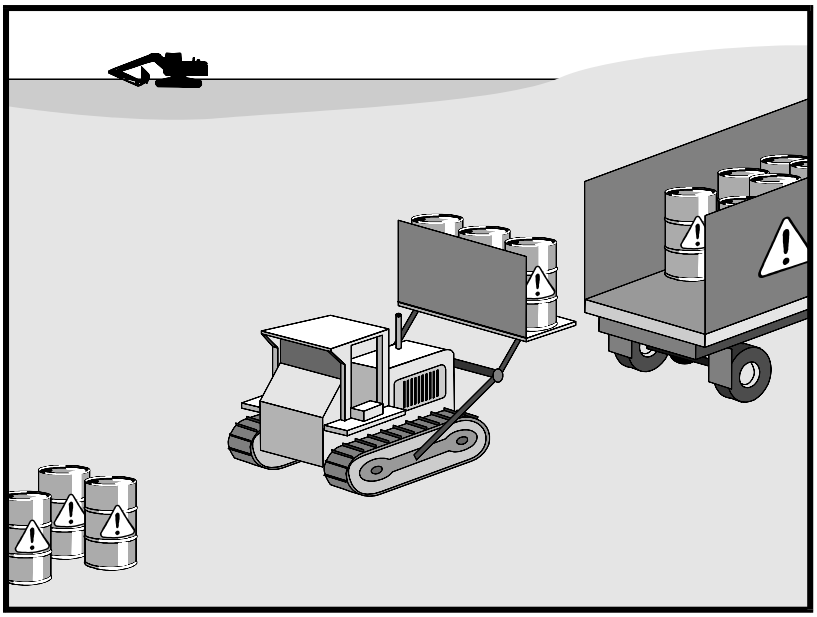
References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Hazardous Waste Management WM-6



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum Products
- Asphalt Products
- Concrete Curing Compounds
- Pesticides
- Palliatives
- Acids
- Septic Wastes
- Paints
- Stains
- Solvents
- Wood Preservatives
- Roofing Tar
- Any materials deemed a hazardous waste in California, Title 22 Division 4.5, or listed in 40 CFR Parts 110, 117, 261, or 302

In addition, sites with existing structures may contain wastes, which must be disposed of in accordance with federal, state, and local regulations. These wastes include:

- Sandblasting grit mixed with lead-, cadmium-, or chromium-based paints
- Asbestos
- PCBs (particularly in older transformers)

Limitations

- Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.
- Nothing in this BMP relieves the contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.
- This BMP does not cover aerially deposited lead (ADL) soils. For ADL soils refer to WM-7, Contaminated Soil Management.

Implementation

The following steps will help reduce stormwater pollution from hazardous wastes:

Material Use

- Wastes should be stored in sealed containers constructed of a suitable material and should be labeled as required by Title 22 CCR, Division 4.5 and 49 CFR Parts 172, 173, 178, and 179.
- All hazardous waste should be stored, transported, and disposed as required in Title 22 CCR, Division 4.5 and 49 CFR 261-263.
- Waste containers should be stored in temporary containment facilities that should comply with the following requirements:
    - Temporary containment facility should provide for a spill containment volume equal to 1.5 times the volume of all containers able to contain precipitation from a 25-year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater.
    - Temporary containment facility should be impervious to the materials stored there for a minimum contact time of 72 hours.
    - Temporary containment facilities should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be placed into drums after each rainfall. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids should be sent to an approved disposal site.
    - Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.

  - Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.

  - Throughout the rainy season, temporary containment facilities should be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs.

- Drums should not be overfilled, and wastes should not be mixed.

- Unless watertight, containers of dry waste should be stored on pallets.

- Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application. Allow time for infiltration and avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains. People applying pesticides must be certified in accordance with federal and state regulations.

- Paint brushes and equipment for water and oil-based paints should be cleaned within a contained area and should not be allowed to contaminate site soils, watercourses, or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused should be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths should be disposed of as solid waste.

- Do not clean out brushes or rinse paint containers into the dirt, street, gutter, storm drain, or stream. “Paint out” brushes as much as possible. Rinse water-based paints to the sanitary sewer. Filter and reuse thinners and solvents. Dispose of excess oil-based paints and sludge as hazardous waste.

- The following actions should be taken with respect to temporary contaminant:

  - Ensure that adequate hazardous waste storage volume is available.

  - Ensure that hazardous waste collection containers are conveniently located.

  - Designate hazardous waste storage areas onsite away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.

  - Minimize production or generation of hazardous materials and hazardous waste on the job site.

  - Use containment berms in fueling and maintenance areas and where the potential for spills is high.

  - Segregate potentially hazardous waste from non-hazardous construction site debris.

  - Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.

- Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
- Place hazardous waste containers in secondary containment.
- Do not allow potentially hazardous waste materials to accumulate on the ground.
- Do not mix wastes.
- Use all of the product before disposing of the container.
- Do not remove the original product label; it contains important safety and disposal information.

Waste Recycling Disposal

- Select designated hazardous waste collection areas onsite.
- Hazardous materials and wastes should be stored in covered containers and protected from vandalism.
- Place hazardous waste containers in secondary containment.
- Do not mix wastes, this can cause chemical reactions, making recycling impossible and complicating disposal.
- Recycle any useful materials such as used oil or water-based paint.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Arrange for regular waste collection before containers overflow.
- Make sure that hazardous waste (e.g., excess oil-based paint and sludge) is collected, removed, and disposed of only at authorized disposal areas.

Disposal Procedures

- Waste should be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
- A Department of Health Services certified laboratory should sample waste to determine the appropriate disposal facility.
- Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
- Attention is directed to "Hazardous Material", "Contaminated Material", and "Aerially Deposited Lead" of the contract documents regarding the handling and disposal of hazardous materials.

Education

- Educate employees and subcontractors on hazardous waste storage and disposal procedures.
- Educate employees and subcontractors on potential dangers to humans and the environment from hazardous wastes.
- Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.
- Instruct employees and subcontractors in identification of hazardous and solid waste.
- Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings).
- The contractor's superintendent or representative should oversee and enforce proper hazardous waste management procedures and practices.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Warning signs should be placed in areas recently treated with chemicals.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- If a container does spill, clean up immediately.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur
- Hazardous waste should be regularly collected.
- A foreman or construction supervisor should monitor onsite hazardous waste storage and disposal procedures.
- Waste storage areas should be kept clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.
- Hazardous spills should be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.

- The National Response Center, at (800) 424-8802, should be notified of spills of federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302. Also notify the Governors Office of Emergency Services Warning Center at (916) 845-8911.
- A copy of the hazardous waste manifests should be provided.

References and Additional Resources

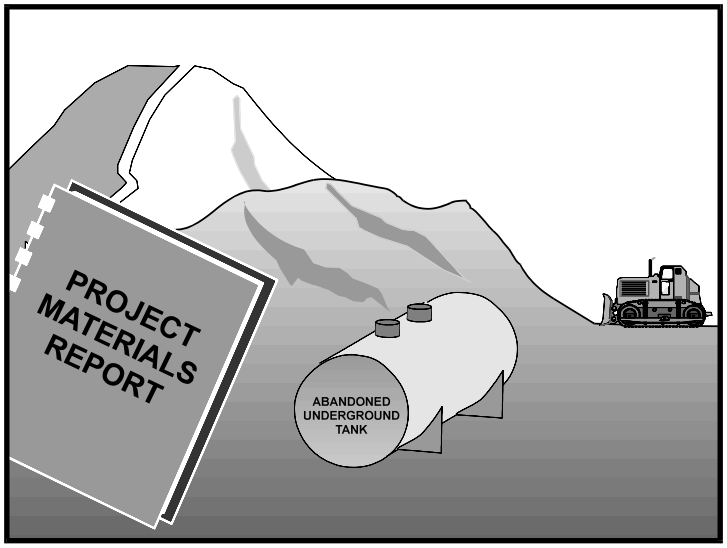
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Contaminated Soil Management WM-7



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from contaminated soil and highly acidic or alkaline soils by conducting pre-construction surveys, inspecting excavations regularly, and remediating contaminated soil promptly.

Suitable Applications

Contaminated soil management is implemented on construction projects in highly urbanized or industrial areas where soil contamination may have occurred due to spills, illicit discharges, aerial deposition, past use and leaks from underground storage tanks.

Limitations

Contaminated soils that cannot be treated onsite must be disposed of offsite by a licensed hazardous waste hauler. The presence of contaminated soil may indicate contaminated water as well. See NS-2, Dewatering Operations, for more information.

The procedures and practices presented in this BMP are general. The contractor should identify appropriate practices and procedures for the specific contaminants known to exist or discovered onsite.

Implementation

Most owners and developers conduct pre-construction environmental assessments as a matter of routine. Contaminated soils are often identified during project planning and development with known locations identified in the plans, specifications and in the SWPPP. The contractor should review applicable reports and investigate appropriate call-outs in the

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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plans, specifications, and SWPPP. Recent court rulings holding contractors liable for cleanup costs when they unknowingly move contaminated soil highlight the need for contractors to confirm a site assessment is completed before earth moving begins.

The following steps will help reduce stormwater pollution from contaminated soil:

- Conduct thorough, pre-construction inspections of the site and review documents related to the site. If inspection or reviews indicated presence of contaminated soils, develop a plan before starting work.
- Look for contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris.
- Prevent leaks and spills. Contaminated soil can be expensive to treat and dispose of properly. However, addressing the problem before construction is much less expensive than after the structures are in place.
- The contractor may further identify contaminated soils by investigating:
  - Past site uses and activities
  - Detected or undetected spills and leaks
  - Acid or alkaline solutions from exposed soil or rock formations high in acid or alkaline forming elements
  - Contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris.
  - Suspected soils should be tested at a certified laboratory.

Education

- Have employees and subcontractors complete a safety training program which meets 29 CFR 1910.120 and 8 CCR 5192 covering the potential hazards as identified, prior to performing any excavation work at the locations containing material classified as hazardous.
- Educate employees and subcontractors in identification of contaminated soil and on contaminated soil handling and disposal procedures.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).

Handling Procedures for Material with Aerially Deposited Lead (ADL)

- Materials from areas designated as containing (ADL) may, if allowed by the contract special provisions, be excavated, transported, and used in the construction of embankments and/or backfill.
- Excavation, transportation, and placement operations should result in no visible dust.
- Caution should be exercised to prevent spillage of lead containing material during transport.

- Quality should be monitored during excavation of soils contaminated with lead.

Handling Procedures for Contaminated Soils

- Minimize onsite storage. Contaminated soil should be disposed of properly in accordance with all applicable regulations. All hazardous waste storage will comply with the requirements in Title 22, CCR, Sections 66265.250 to 66265.260.
- Test suspected soils at an approved certified laboratory.
- Work with the local regulatory agencies to develop options for treatment or disposal if the soil is contaminated.
- Avoid temporary stockpiling of contaminated soils or hazardous material.
- Take the following precautions if temporary stockpiling is necessary:
  - Cover the stockpile with plastic sheeting or tarps.
  - Install a berm around the stockpile to prevent runoff from leaving the area.
  - Do not stockpile in or near storm drains or watercourses.
- Remove contaminated material and hazardous material on exteriors of transport vehicles and place either into the current transport vehicle or into the excavation prior to the vehicle leaving the exclusion zone.
- Monitor the air quality continuously during excavation operations at all locations containing hazardous material.
- Procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work, including registration for transporting vehicles carrying the contaminated material and the hazardous material.
- Collect water from decontamination procedures and treat or dispose of it at an appropriate disposal site.
- Collect non-reusable protective equipment, once used by any personnel, and dispose of at an appropriate disposal site.
- Install temporary security fence to surround and secure the exclusion zone. Remove fencing when no longer needed.
- Excavate, transport, and dispose of contaminated material and hazardous material in accordance with the rules and regulations of the following agencies (the specifications of these agencies supersede the procedures outlined in this BMP):
  - United States Department of Transportation (USDOT)
  - United States Environmental Protection Agency (USEPA)
  - California Environmental Protection Agency (CAL-EPA)

- California Division of Occupation Safety and Health Administration (CAL-OSHA)
- Local regulatory agencies

Procedures for Underground Storage Tank Removals

- Prior to commencing tank removal operations, obtain the required underground storage tank removal permits and approval from the federal, state, and local agencies that have jurisdiction over such work.
- To determine if it contains hazardous substances, arrange to have tested, any liquid or sludge found in the underground tank prior to its removal.
- Following the tank removal, take soil samples beneath the excavated tank and perform analysis as required by the local agency representative(s).
- The underground storage tank, any liquid or sludge found within the tank, and all contaminated substances and hazardous substances removed during the tank removal and transported to disposal facilities permitted to accept such waste.

Water Control

- All necessary precautions and preventive measures should be taken to prevent the flow of water, including ground water, from mixing with hazardous substances or underground storage tank excavations. Such preventative measures may consist of, but are not limited to, berms, cofferdams, grout curtains, freeze walls, and seal course concrete or any combination thereof.
- If water does enter an excavation and becomes contaminated, such water, when necessary to proceed with the work, should be discharged to clean, closed top, watertight transportable holding tanks, treated, and disposed of in accordance with federal, state, and local laws.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Arrange for contractor's Water Pollution Control Manager, foreman, and/or construction supervisor to monitor onsite contaminated soil storage and disposal procedures.
- Monitor air quality continuously during excavation operations at all locations containing hazardous material.
- Coordinate contaminated soils and hazardous substances/waste management with the appropriate federal, state, and local agencies.
- Implement WM-4, Spill Prevention and Control, to prevent leaks and spills as much as possible.

References and Additional Resources

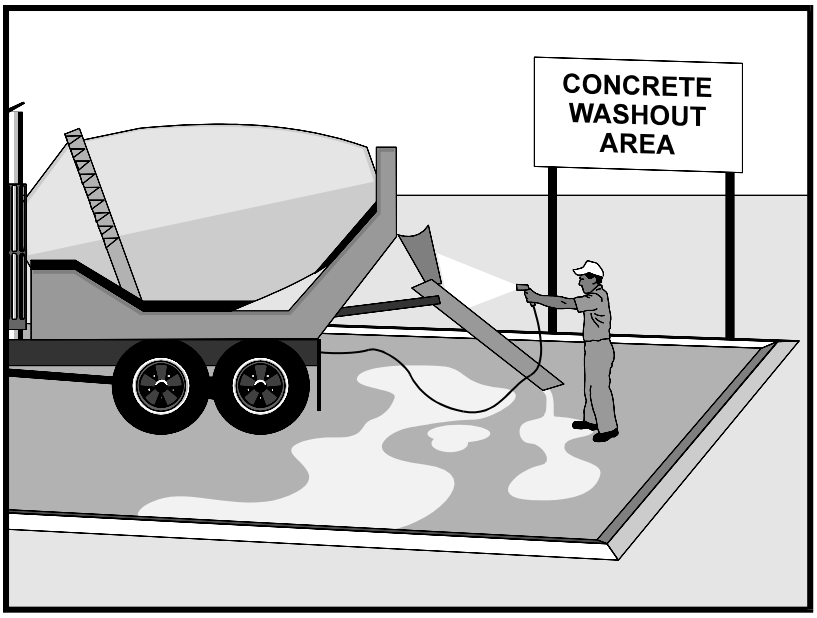
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Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

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Concrete Waste Management WM-8



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Description and Purpose

Prevent the discharge of pollutants to stormwater from concrete waste by conducting washout onsite or offsite in a designated area, and by employee and subcontractor training.

The General Permit incorporates Numeric Action Levels (NAL) for pH (see Section 2 of this handbook to determine your project's risk level and if you are subject to these requirements).

Many types of construction materials, including mortar, concrete, stucco, cement and block and their associated wastes have basic chemical properties that can raise pH levels outside of the permitted range. Additional care should be taken when managing these materials to prevent them from coming into contact with stormwater flows and raising pH to levels outside the accepted range.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Slurries containing Portland cement concrete (PCC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition.
- Concrete trucks and other concrete-coated equipment are washed onsite.

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- Mortar-mixing stations exist.
- Stucco mixing and spraying.
- See also NS-8, Vehicle and Equipment Cleaning.

Limitations

- Offsite washout of concrete wastes may not always be possible.
- Multiple washouts may be needed to assure adequate capacity and to allow for evaporation.

Implementation

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Store dry and wet materials under cover, away from drainage areas. Refer to WM-1, Material Delivery and Storage for more information.
- Avoid mixing excess amounts of concrete.
- Perform washout of concrete trucks in designated areas only, where washout will not reach stormwater.
- Do not wash out concrete trucks into storm drains, open ditches, streets, streams or onto the ground. Trucks should always be washed out into designated facilities.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
    - On larger sites, it is recommended to locate washout areas at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
    - Washout wastes into the temporary washout where the concrete can set, be broken up, and then disposed properly.
    - Washouts shall be implemented in a manner that prevents leaching to underlying soils. Washout containers must be water tight and washouts on or in the ground must be lined with a suitable impervious liner, typically a plastic type material.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.
- See typical concrete washout installation details at the end of this fact sheet.

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.

- Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.
- Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.

Concrete Demolition Wastes

- Stockpile concrete demolition waste in accordance with BMP WM-3, Stockpile Management.
- Dispose of or recycle hardened concrete waste in accordance with applicable federal, state or local regulations.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC waste should be collected and disposed of or placed in a temporary concrete washout facility (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below).
- A foreman or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.
- Saw-cut concrete slurry should not be allowed to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine or by sweeping. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement. See also NS-3, Paving and Grinding Operations; and WM-10, Liquid Waste Management.
- Concrete slurry residue should be disposed in a temporary washout facility (as described in Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below) and allowed to dry. Dispose of dry slurry residue in accordance with WM-5, Solid Waste Management.

Onsite Temporary Concrete Washout Facility, Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities should have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
- Temporary washout facilities should be lined to prevent discharge to the underlying ground or surrounding area.
- Washout of concrete trucks should be performed in designated areas only.
- Only concrete from mixer truck chutes should be washed into concrete wash out.
- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of or recycled offsite.
- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per WM-5, Solid Waste Management. Dispose of or recycle hardened concrete on a regular basis.
- Temporary Concrete Washout Facility (Type Above Grade)
    - Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft; however, smaller sites or jobs may only need a smaller washout facility. With any washout, always maintain a sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.
    - Materials used to construct the washout area should conform to the provisions detailed in their respective BMPs (e.g., SE-8 Sandbag Barrier).
    - Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
    - Alternatively, portable removable containers can be used as above grade concrete washouts. Also called a “roll-off”; this concrete washout facility should be properly sealed to prevent leakage and should be removed from the site and replaced when the container reaches 75% capacity.
- Temporary Concrete Washout Facility (Type Below Grade)
    - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.
    - Lath and flagging should be commercial type.
    - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

- The base of a washout facility should be free of rock or debris that may damage a plastic liner.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and properly disposed or recycled in accordance with federal, state or local regulations. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and properly disposed or recycled in accordance with federal, state or local regulations.

- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12 in. for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and properly disposed or recycled in accordance with federal, state or local regulations.

- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

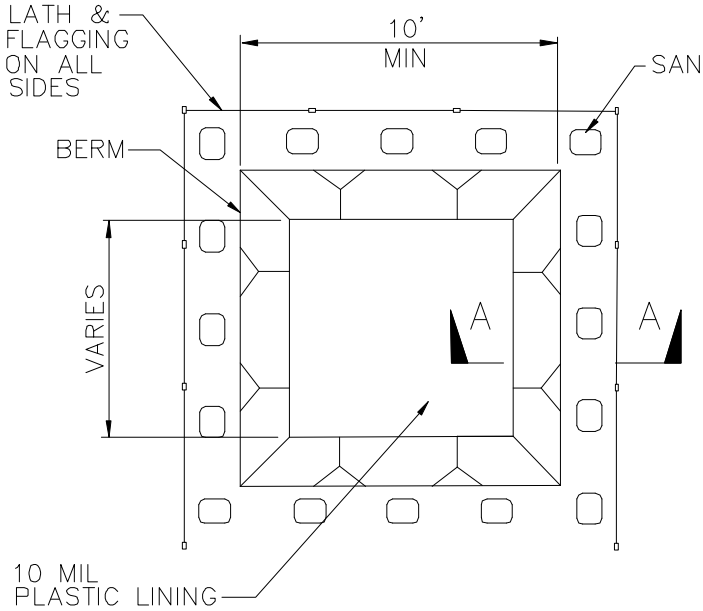
- Inspect washout facilities for damage (e.g. torn liner, evidence of leaks, signage, etc.). Repair all identified damage.

References and Additional Resources

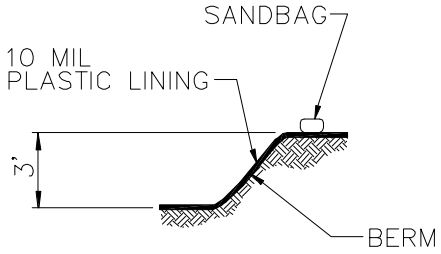
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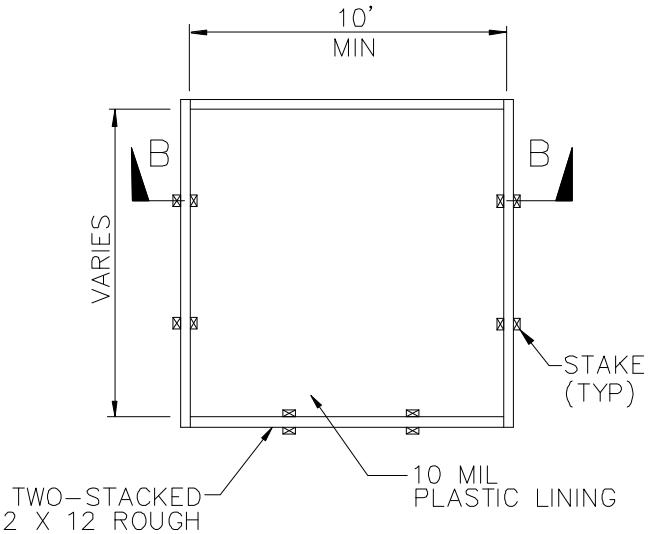
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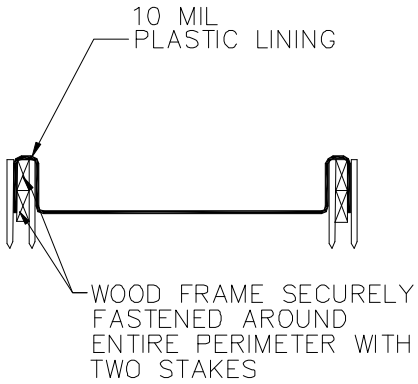
PLAN
NOT TO SCALE
TYPE "BELOW GRADE"



SECTION A–A
NOT TO SCALE



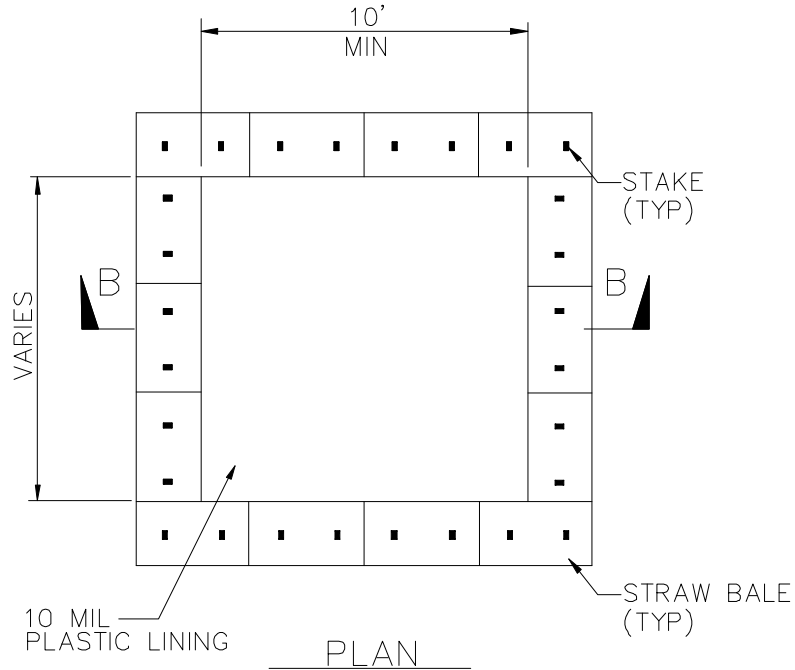
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"



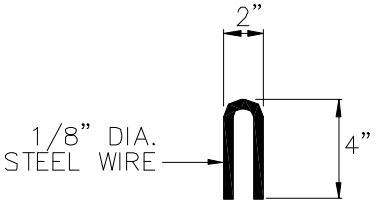
SECTION B–B
NOT TO SCALE

NOTES

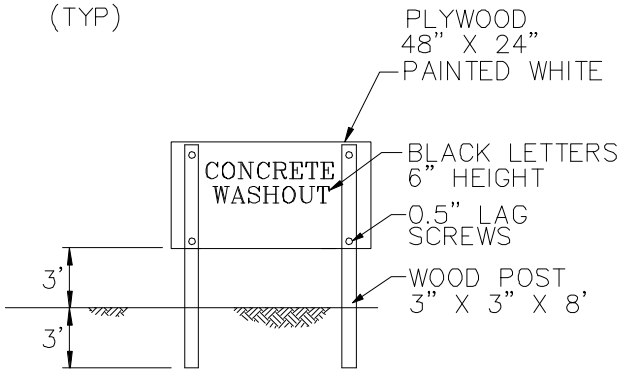
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.



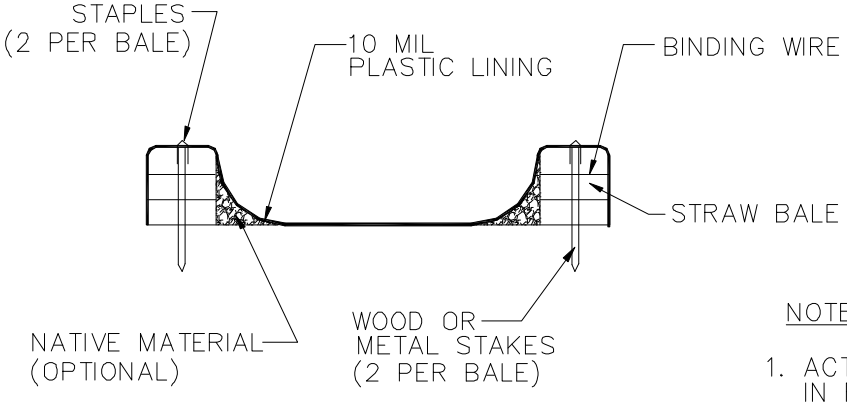
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"
WITH STRAW BALES



STAPLE DETAIL



CONCRETE WASHOUT
SIGN DETAIL
(OR EQUIVALENT)

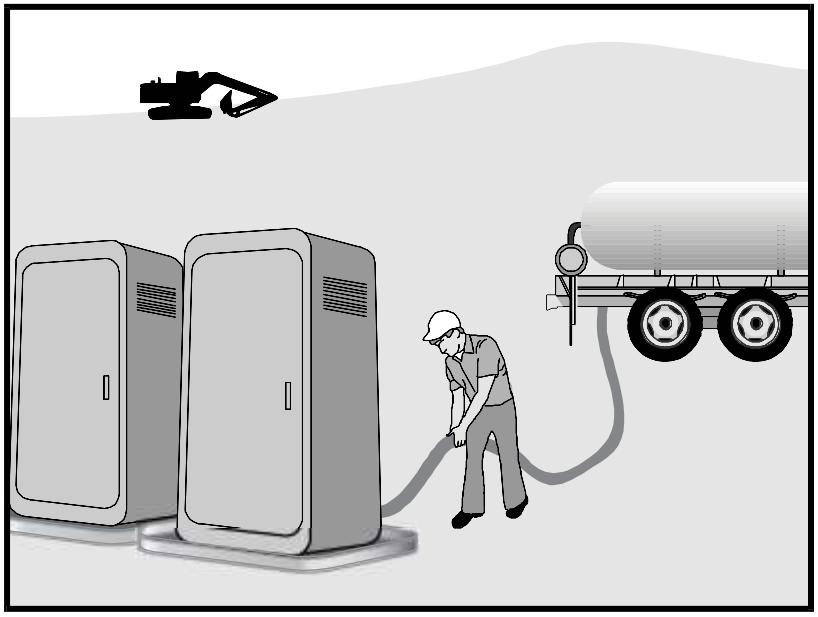


SECTION B–B
NOT TO SCALE

NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Sanitary/Septic Waste Management WM-9



Categories

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. If site conditions allow, place portable facilities a minimum of 50 feet from drainage conveyances and traffic areas. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.

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- Temporary sanitary facilities must be equipped with containment to prevent discharge of pollutants to the stormwater drainage system of the receiving water.
- Consider safety as well as environmental implications before placing temporary sanitary facilities.
- Wastewater should not be discharged or buried within the project site.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.
- Only reputable, licensed sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- If using an onsite disposal system (OSDS), such as a septic system, local health agency requirements must be followed.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.
- If a spill does occur from a temporary sanitary facility, follow federal, state and local regulations for containment and clean-up.

Education

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.
- Hold regular meetings to discuss and reinforce the use of sanitary facilities (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected

weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.

- Arrange for regular waste collection.
- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.
- If spills or leaks from sanitary or septic facilities occur that are not contained and discharge from the site, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

References and Additional Resources

Construction Site Best Management Practices (BMPs) Manual, CTSW-RT-24-425.11.1, California Department of Transportation (Caltrans), March 2024.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Appendix I

Applicable Supplemental Information

RUSLE2 Calculations
Active Treatment System Plan
Passive Treatment System Plan
Other Applicable Plans, Permits, Reports, and Studies

Pacific Gas and Electric Company®

Appendix J

Training Documentation

QSD/QSP and QSP Certifications
Training Brochure
Completed Contractor Training Forms
Completed QSP Delegate Training Forms

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CERTIFICATE OF TRAINING

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QUALIFIED SWPPP DEVELOPER (QSD)
AND
QUALIFIED SWPPP PRACTITIONER (QSP)

KATY DeYoe

Dec 10, 2023 - Feb 15, 2026

Certificate # 28061

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Galen Pelzmann

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Sean Bowen

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QUALIFIED SWPPP PRACTITIONER (QSP)

Andrew Passarelli

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Certificate # 22937

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CERTIFICATE OF COMPLETION

This certificate is awarded to

David Teimoorian

In recognition of completion of the

State Water Board-Sponsored CBPELSG Licensee QSD Training

CALIFORNIA
Water Boards

Signature

February 11, 2022

Date

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Appendix K

Completed Forms



Pacific Gas and Electric Company®